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Paper 47
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BUTAMAX™ ADVANCED BIOFUELS LLC,
Petitioner,

v.

GEVO, INC.,
Patent Owner.

Case IPR2013-00215
Patent 8,283,505 B2

Before RAMA G. ELLURU, CHRISTOPHER L. CRUMBLEY, and ZHENYU YANG, *Administrative Patent Judges*.

YANG, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Butamax™ Advanced Biofuels LLC ("Butamax") petitioned for an *inter partes* review of claims 1–18 of U.S. Patent No. 8,283,505 B2 ("the '505 patent"). Paper 2 ("Pet."). On September 30, 2013, the Board instituted trial to review all challenged claims on several obviousness grounds. Paper 10 ("Dec."). Thereafter, Patent Owner, Gevo, Inc. ("Gevo"), filed a Response (Paper 22 ("PO Resp.")) and Butamax filed a Reply (Paper 33 ("Reply")). Oral hearing was held on April 30, 2014. *See* Paper 46 ("Tr.").

The Board has jurisdiction under 35 U.S.C. § 6(c) and issues this final written decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons provided below, we conclude that Butamax has proved by a preponderance of the evidence that claims 1–18 of the '505 patent are unpatentable.

A. Related Proceedings

Concurrent with the present *inter partes* review, Butamax also petitioned for review of, and the Board instituted trial on, claims 1–28 of U.S. Patent No. 8,304,588, a patent in the same family as the '505 patent. *See Butamax™ Advanced Biofuels LLC v. Gevo, Inc.*, Case IPR2013-00214 (PTAB Sept. 30, 2013) (Paper 11). Because of overlapping issues between the two proceedings, we consolidated the oral hearings for IPR2013-00214 and IPR2013-00215. *See* Tr. of Oral Hr'g at 2:17–18, *Butamax™ Advanced Biofuels LLC v. Gevo, Inc.*, Case IPR2013-00214 (PTAB Apr. 30, 2014) (Paper 45) ("IPR2013-00214 Tr.").

B. The '505 Patent

The '505 patent relates to a method for recovering C3–C6 alcohols, specifically isobutanol, from dilute aqueous solutions, such as fermentation broths. Ex. 1001, Abstract; 8:25–27. The method includes culturing a microorganism in a fermentation medium to produce the alcohol. *Id.* at 4:63–65. The Specification discloses embodiments in which "[f]ermentation and recovery may be conducted simultaneously." *Id.* at 8:27–28. For example, the method includes distilling a portion of the fermentation medium to produce a vapor phase that includes water and the alcohol, and returning the liquid phase to the fermentor. *Id.* at 4:67–5:12. The method further includes condensing the vapor phase to form an alcohol-rich liquid phase and a water-rich liquid phase, and then separating the liquid phases. *Id.* at 5:12–23. "Separation of the phases can be accomplished in various unit operations including liquid-liquid separators . . . ." *Id.* at 17:33–35. Recovery during fermentation, according to the '505 patent, improves fermentation volumetric productivity and reduces the required energy. *Id.* at 8:28–33.

Claim 1 is the sole independent claim in this trial. It reads:

> 1. A method for producing isobutanol comprising:
> (a) culturing a microorganism capable of producing isobutanol in a fermentor, thereby forming a fermentation broth comprising microorganisms and isobutanol;
> (b) removing a portion of the fermentation broth from the fermentor;
> (c) distilling the portion, thereby forming an isobutanol-depleted liquid phase and an isobutanol-enriched vapor phase comprising water and isobutanol;

(d) condensing the isobutanol-enriched vapor phase formed in step (c), thereby forming an isobutanol-rich liquid phase and a water-rich liquid phase; and
(e) separating the isobutanol-rich phase liquid from the water-rich liquid phase using a liquid-liquid separator;
wherein:
(1) said steps (b)–(e) are conducted simultaneously with step (a);
(2) the isobutanol-depleted liquid phase comprises viable microorganisms; and
(3) the isobutanol-depleted liquid phase is returned to the fermentor.

C. Reviewed Grounds of Unpatentability

The Board instituted trial on the following grounds of unpatentability:

Claims Challenged	Basis	References
1, 9, 10, and 13–17	§ 103	English[1] and D'Amore[2]
2–8, 11, 12, and 18	§ 103	English, D'Amore, and Bramucci[3]
1, 9, 10, and 13–17	§ 103	Maiorella,[4] Hess,[5] and D'Amore
2–8, 11, 12, and 18	§ 103	Maiorella, Hess, D'Amore, and Bramucci

[1] English et al., U.S. Patent No. 4,349,628 (Ex. 1002) ("English").
[2] D'Amore et al., U.S. Patent Pub. No. 2008/0132741 Al (Ex. 1003) ("D'Amore").
[3] Bramucci et al., U.S. Patent Pub. No. 2008/0124774 A1 (Ex. 1004) ("Bramucci").
[4] B. L. Maiorella et al., *Biotechnology Report Economic Evaluation of Alternative Ethanol Fermentation Processes*, 26 BIOTECHNOLOGY AND BIOENGINEERING 1003 (1984) (Ex. 1005) ("Maiorella").
[5] Glenn Hess, *BP and DuPont Plan 'Biobutanol,'* CHEMICAL & ENGINEERING NEWS, June 26, 2006, at 9 (Ex. 1006) ("Hess").

II. ANALYSIS

A. Real-Party-in-Interest Analysis

A petitioner for an *inter partes* review must identify all real parties in interest. 35 U.S.C. § 312(a)(2); *see also* 37 C.F.R. § 42.8(b)(1). Whether a non-party is a real party in interest is a highly fact-dependent question. Office Patent Trial Practice Guide ("Trial Practice Guide"), 77 Fed. Reg. 48,756, 48,759 (Aug. 14, 2012). One factor in such inquiry is whether the non-party "exercised or could have exercised control over a party's participation in a proceeding." *Id.*

Gevo argues that E.I. Dupont de Nemours and Co. ("DuPont") is a real party in interest. PO Resp. 31–32. Butamax is a joint venture of DuPont and BP Biofuels North America LLC ("BP"). Ex. 2001, 1. Gevo emphasizes that Butamax and DuPont are the only two co-plaintiffs in a district court action seeking a declaration of non-infringement of the '505 patent. PO Resp. 31–32. This fact, Gevo argues, demonstrates that DuPont has an interest in invalidating the '505 patent. *Id.* This fact also, according to Gevo, distinguishes this proceeding from the one the Board cited in the Decision to Institute, U.S. Patent No. 6,374,180, Reexamination Control No. 95/001,852 (Dec. 13, 2011). Dec. 3–4. In that proceeding, Gevo points out, two co-defendants in related litigation were asserted to be real parties in interest, in contrast to the present proceeding in which Butamax and DuPont are co-plaintiffs. PO Resp. 32. Gevo's arguments are unpersuasive.

Gevo correctly asserts that "at a general level, the 'real party-in-interest' is the party that desires review of the patent." *Id.* at 31 (quoting Trial Practice Guide, 77 Fed. Reg. at 48,759). But this does not mean that *any* party that desires review of a patent is a real party in interest. After all,

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