

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CARLISLE FLUID TECHNOLOGIES, INC.,
Petitioner,

v.

AKURATE DYNAMICS, LLC,
Patent Owner.

IPR2021-01256
Patent 10,159,996 B2

Before BARRY L. GROSSMAN, ERIC C. JESCHKE, and
RYAN H. FLAX, *Administrative Patent Judges*.

GROSSMAN, *Administrative Patent Judge*.

DECISION

Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

A. *Background and Summary*

Carlisle Fluid Technologies, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–20 (the “challenged claims”) of U.S. Patent No. 10,159,996 B2 (Ex. 1001, “the ’996 patent”).

Akurate Dynamics, LLC. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314. Under § 314, an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). The Board determines whether to institute a trial on behalf of the Director. 37 C.F.R. § 42.4(a). If an *inter partes* review is instituted, a final written decision under 35 U.S.C. § 318(a) must decide the patentability of all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1353 (2018).

For the reasons set forth below, we determine that Petitioner has demonstrated that there is a reasonable likelihood that at least one of claims 1–20 is unpatentable. Accordingly, we institute an *inter partes* review of all challenged claims and on all grounds asserted in the Petition. *See* 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

B. Real Parties in Interest

Petitioner states the “real parties-in-interest are CFT,¹ Carlisle Construction Materials, LLC, and Carlisle Companies Inc.” *See* Pet. 2. Patent Owner identifies itself, Akurate Dynamics, LLC, as the sole real-party-in-interest. Paper 4, 1.

¹ “CFT” refers to the sole named Petitioner, which is Carlisle Fluid Technologies, Inc. Pet. 1 (“Carlisle Fluid Technologies, Inc. (‘CFT’ or ‘Petitioner’)”).

C. Related Matters

Petitioner states that the sole related matter is “now-terminated *Akurate Dynamics, LLC v. Carlisle Fluid Technologies, Inc.*, Civil Action No. 6:20-cv-00606-ADA (W.D. Tex.).” Pet. 2; *see also* Ex. 3001, 6 (“Because Akurate did not adequately plead proper venue for its patent infringement claim . . . [and] failed to establish proper venue for its non-patent claims . . . CFT’s Motion to Dismiss (ECF No. 28) is **GRANTED** and this case is **CLOSED**.”). Petitioner adds that in this suit “Akurate asserted that CFT infringes claim 20 of the ’996 patent.” Pet. 2.

Patent Owner states “Patent Owner is aware of no related matters.” Paper 4, 1.

D. The ’996 Patent

The ’996 patent is titled “System for Dispensing Multiple Component Chemical Sprays.” Ex. 1001, code (54). The disclosed system relates to the “field of systems for spray application of multiple component liquid compounds, wherein the multiple components are mixed at the point of spray application.” *Id.* at 1:22–25. Examples of such multiple component liquid compounds “include thermal insulation which may consist of two liquid components to be mixed at the point of application. The two liquid components react at the point of application to form a foam, which eventually cures into finished insulation.” *Id.* at 1:43–47. According to the Specification, these spray systems “require very precise control over the volume and/or mass flow rate of each of a plurality of liquid chemicals when applied by a spray gun.” *Id.* at 1:25–29.

The ’996 patent acknowledges that known systems include a “plurality of liquid chemicals,” which are “mixed at the point of application of the spray discharged from the sprayer.” *Id.* at 1:30–38. In these known

systems, each chemical is contained individually in 55 gallon drums and pumped through individual hoses to a “spray application ‘gun’ or sprayer.” *Id.*

The Specification also acknowledges that “[m]anufacturers of multiple component liquid chemical compounds specify the volume and/or mass of each component that is required to be dispensed so that the correct chemical reaction or other physical process (e.g., evaporation) takes place at the point of application.” Ex. 1001, 1:48–52. According to the ’996 patent, however, using systems known in the art for spray applying multiple component chemicals “may not have sufficient accuracy in determining the volume and/or mass flow rate of each component chemical to dispense the manufacturer-specified amount of each component chemical when the spray is actually applied.” *Id.* at 1:52–57. The ’996 patent also states that these known systems pose a number of “environmental and personnel hazards.” *Id.* at 1:58–2:5.

Figure 1 from the ’996 patent, the sole figure in the Specification, is reproduced below.

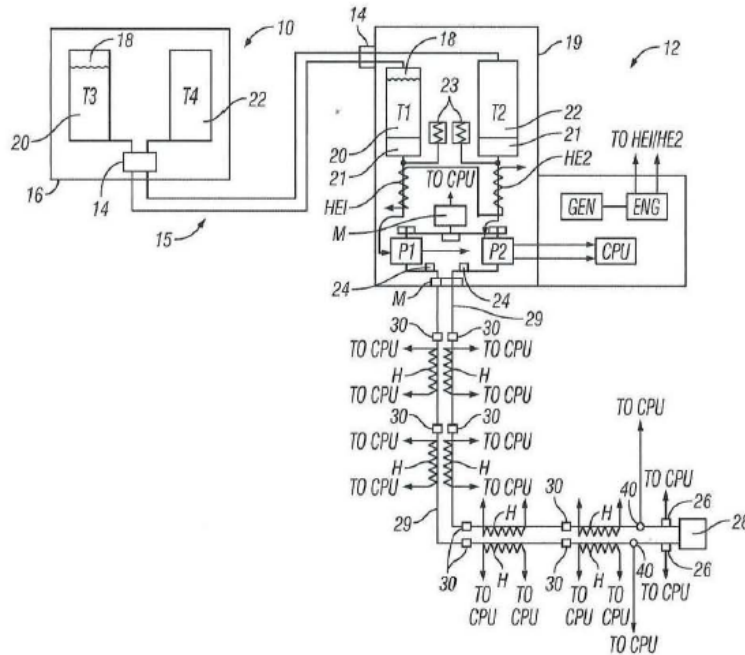


FIG. 1 shows an “embodiment of a multiple component spray applicator system according to the [’996 patent] disclosure.” Ex. 1001, 2:14–16.

As shown in Figure 1, the disclosed system may include bulk storage filling unit 10 and chemical dispensing unit 12. *Id.* at 2:16–17. Bulk storage filling unit 10 may include individual chemical storage tanks for each of a plurality of separate chemicals to be dispensed by chemical dispensing unit 12. *Id.* at 2:24–30. In the embodiment shown in Figure 1, there are two different chemicals, each stored in a separate storage tank, shown at T3, T4. First liquid chemical 20 is disposed in chemical storage tank T3. Second liquid chemical 22 may be disposed in chemical storage tank T4. *Id.* at 2:33–39. In addition to *storage* tanks T3, T4, chemical dispensing unit 12 may include separate *supply* tanks T1, T2 for each of the separate liquid chemicals 20, 22 to be applied by spraying. *Id.* at 2:50–52.

The interior of chemical dispensing unit protective housing 19 may be thermally insulated so that the temperature inside protective housing 19 is

maintained at a selected temperature. Ex. 1001, 2:60–63. This allows use at locations where the ambient temperature may be too low for proper withdrawal of liquid chemicals 20, 22 from respective supply tanks T1, T2. *Id.* at 2:63–67.

Each supply tank T1, T2 is coupled to a respective low pressure transfer pump 21, which is coupled to a respective applicator pump P1, P2. *Id.* at 3:1–5. The outlet of each low pressure transfer pump 21 is in “pressure communication” with accumulator 23. *Id.* at 3:5–7. Low pressure transfer pumps 21 and accumulators 23 maintain a minimum pressure in the inlet to each applicator pump P1, P2 in order to reduce the possibility of cavitation. *Id.* at 3:7–10.

Using various hoses, valves, and the described pumps, chemicals 20, 22 eventually reach spray gun 28.

A central processor CPU receives input signals from temperature sensors 30 and first and second pressure sensors 24, 26. The CPU also receives input measurements of volume of liquid pumped from each of applicator pumps P1, P2. The CPU also operates the motors M and the heating elements H. *Id.* at 3:55–64. According to the Specification, “[b]y selecting a temperature for each liquid chemical to be maintained at a selected viscosity, a pumping rate of each liquid chemical 20, 22 through each respective chemical delivery hose 29 may be more precisely controllable.” *Id.* at 4:2–6. Pressure differences are used by the CPU to adjust the temperature measured at each of temperature sensors 30 by operating respective ones of heaters H so that a selected pressure difference is maintained during spray application of each of chemicals 20, 22. *Id.* at 4:14–19. The Specification states that “[b]y adjusting temperature so that selected pressure differences are maintained, more precise control over

respective flow rates of each liquid chemical 20, 22 may be maintained.”
Id. at 4:19–22.

1. Prosecution History

During prosecution of the application that matured into the ’996 patent, a telephone interview was held with the Examiner. Ex. 1002, 187. During the interview, the Appellant suggested further amending the independent claims to include “a spray gun, first and second heated discharge hoses, and four pressure sensors at the inlet and outlet of each hose, and the processor connected to all the sensors in order to control the first and second pumps.” *Id.* The Examiner agreed that the “added limitations . . . differentiated the claims from the prior art.” *Id.* The Examiner prepared an Examiner’s Amendment of the claims to include the added limitations. *Id.*

A Notice of Allowability, including the Examiner’s amendment of independent claims 1 and 20, and the reasons for allowance, followed the interview. Ex. 1002, 189–196. As reasons for allowance, the Examiner stated “[a]lthough Pham et al (U.S. 2003/0158630) teaches some of the claimed structure including first and second flow rate sensors, Pham fails to teach, among other things, a spray gun.” *Id.* at 193. The Examiner also stated that “O’Leary et al (U.S. 2014/0209630) does not teach a first, second, third and fourth pressure sensors, as claimed. Instead, O’Leary teaches a pressure sensor at an upstream end and a downstream end of a pump, not at both ends of two discharge hoses, as claimed.” *Id.* at 194. Additionally, the Examiner stated “Tix [a reference] fails to teach, among other things, pressure sensors for measuring pressure at an inlet end and at an outlet end of each discharge hose, wherein a processor uses the readings from the pressure sensors to maintain a desired temperature throughout the

system.” *Id.* In summary, the Examiner stated “[a]fter further consideration and search, [the] Examiner was not able to find a system that teaches a processor that makes use of two flow sensors, and four pressure sensors to control two pumps and adjust their input in real time, as claimed.” *Id.* The claims, as amended by the Examiner, issued as the ’996 patent’s claims.

E. Illustrative Claim

Claims 1 and 20 are independent claims challenged in the Petition. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An apparatus for simultaneously dispensing at least two liquids at preselected flow rates comprising:

- a spray gun;
- a first container containing a first liquid;
- a second container containing a second liquid;
- a first pump having an inlet in fluid communication with the first container, the first pump having an outlet;
- a first pressure sensor in fluid communication with the outlet of the first pump;
- a first heated hose having an inlet connected to the outlet of the first pump and an outlet connected to the spray gun;
- a second pump having an inlet in fluid communication with the second container, the second pump having an outlet;
- a second pressure sensor in fluid communication with the outlet of the second pump;
- a second heated hose having an inlet connected to the outlet of the second pump and an outlet connected to the spray gun;
- a third pressure sensor in fluid communication with the outlet of the first heated hose;
- a fourth pressure sensor in fluid communication with the outlet of the second heated hose;

a first flow rate sensor in fluid communication with the outlet of the first heated hose;

a second flow rate sensor in fluid communication with the outlet of the second heated hose;

a processor connected to the first pump, the second pump, the first pressure sensor, the second pressure sensor, the third pressure sensor, the fourth pressure sensor, the first flow rate sensor, and the second flow rate sensor and configured to vary the output of the second pump in real time in response to signals from the pressure sensor, the first flow rate sensor and the second flow rate sensor.

Ex. 1001, 4:63–5:31.

Independent claim 1 is directed to an “apparatus.” Independent claim 20 is similar to claim 1, but is directed to a “method” for simultaneously dispensing at least two liquids from a spray gun.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–20 would have been unpatentable on the following grounds (Pet. 4–5):

Claim(s) Challenged	35 U.S.C. § ²	Reference(s)/Basis
1–5, 11, 17–20	103	Kogelbauer ³
8–10, 13–16	103	Kogelbauer, Cline ⁴
7	103	Kogelbauer, Kropfield ⁵
6, 12	103	Kogelbauer, Kukesh ⁶

Petitioner also relies on the Declaration testimony of David A. Rockstraw, Ph.D. (*see* Ex. 1003).

II. ANALYSIS

A. Legal Standards

Petitioner has the burden of proof. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”).

Section 103(a) forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296–07 (2011), took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA do not apply to any patent application filed before March 16, 2013. Because the application for the patent at issue in this proceeding has an actual filing date of January 10, 2018, and a claimed effective filing date of October 20, 2014, which dates are after March 16, 2013, we refer to the AIA version of the statute.

³ Certified Translation of published Austrian Patent Application, Pub. No. 505858 A1, published April 15, 2009 (Ex. 1006, “Kogelbauer”).

⁴ U.S. Patent 5,857,589, iss. January 12, 1999 (Ex. 1017, “Cline”).

⁵ U.S. Patent 5,810,254, iss. September 22, 1998 (Ex. 1014, “Kropfield”).

⁶ U.S. Patent 4,809,909, iss. March 7, 1989 (Ex. 1021, “Kukesh”).

(2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*; *see also*

⁷ Patent Owner does not direct us to any objective evidence of non-obviousness in its Preliminary Response.

Orexo AB v. Actavis Elizabeth LLC, 903 F.3d 1265, 1273 (Fed. Cir. 2018) (“The question is not whether the various references separately taught components of the ’330 Patent formulation, but whether the prior art suggested the selection and combination achieved by the ’330 inventors.”).

Accordingly, an obviousness determination generally requires a finding “that a person of ordinary skill in the art would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so.” *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160 (Fed. Cir. 2021) (citing *OSI Pharms.*, 939 F.3d at 1382 (quoting *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018))). “Whether the prior art discloses a claim limitation, whether a skilled artisan would have been motivated to modify or combine teachings in the prior art, and whether she would have had a reasonable expectation of success in doing so are questions of fact.” *Strathclyde*, 17 F.4th at 160.

In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason *why* a person of skill in the art would have made the combination. *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017).

Moreover, in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 164 (Fed. Cir. 1985) (“It is elementary that the claimed invention must be considered as a *whole* in deciding the question of

obviousness.”); *see also Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983) (“[T]he question under 35 U.S.C. § 103 is not whether the differences *themselves* would have been obvious. Consideration of differences, like each of the findings set forth in *Graham*, is but an aid in reaching the ultimate determination of whether the claimed invention *as a whole* would have been obvious.”).

As a factfinder, we also must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR*, 550 U.S. at 421.

Applying these general principles, we consider the evidence and arguments of the parties.

B. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). “This reference point prevents . . . factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.* Moreover, “the inquiry into whether any ‘differences’ between the invention and the prior art would have rendered the invention obvious to a skilled artisan necessarily depends on such artisan’s knowledge.”

Koninklijke Philips N.V. v. Google LLC, 948 F.3d 1330, 1337 (Fed. Cir. 2020) (citing *Dow Jones & Co. v. Abblaise Ltd.*, 606 F.3d 1338, 1349, 1353 (Fed. Cir. 2010) (affirming the district court’s grant of summary judgment of invalidity in part because the obviousness “analysis *requires* an assessment of the ‘. . . background knowledge possessed by a person having ordinary skill in the art’” (emphasis added))).

Factors pertinent to a determination of the level of ordinary skill in the art include: (1) educational level of the inventor; (2) type of problems

encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field. *Env't Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case. *Id.* Moreover, these factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. Ltd, Inc. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).

In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima*, 261 F.3d at 1355.

Additionally, the Supreme Court informs us that “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR*, 550 U.S. at 421.

Petitioner asserts that a person of ordinary skill in the art at the relevant time would have had “at least a bachelor’s degree in chemical engineering or a similar discipline, and three years of experience in the research, design, or implementation of systems for controlling the feed rates of multiple components.” Pet. 27 (citing Ex. 1003 ¶ 70). Dr. Rockstraw repeats *verbatim* the identical one-sentence conclusion stated by Petitioner. Ex. 1003 ¶ 70. Dr. Rockstraw does not provide any facts, data, or analysis to support his opinion. His opinion on the level of ordinary skill is entitled to no probative weight. 37 C.F.R. § 42.65 (a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Merely repeating a conclusory argument

from the Petition in the declaration testimony of a proposed expert does not give that argument enhanced probative value.

Patent Owner does not propose a level of ordinary skill, nor does Patent Owner comment on Petitioner's proposed ordinary level of skill.

The asserted prior art reflects knowledge of chemistry, chemical engineering, mechanical engineering (such as pumps and sensors), electrical engineering (signal communication), and computer science (such as computer processors).

Accordingly, for purposes of this Decision, based on the asserted prior art in the record before us, we determine a person of ordinary skill in the relevant technology at the relevant time would have had a bachelor's degree in one or more of the areas of chemistry, chemical engineering, mechanical engineering, electrical engineering, or computer science, and two years of relevant experience. A recipient of other academic degrees may qualify as a person of ordinary skill if they have taken coursework or have experience in the pertinent technology. Additional education, such as an advanced degree, could offset less work experience; additional work experience could offset less education or coursework.

C. Claim Construction

We construe each claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b) (2021). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*).

Petitioner asserts that the claims do not require construction. Pet. 27–28.

Patent Owner does not propose any claim constructions.

Given the lack of dispute on this record, we need not construe the claims. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (claims are construed only to the extent necessary to resolve a dispute).

We determine that an explicit construction of the claims is not necessary for the purposes of determining whether there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. This initial claim construction determination does not preclude the parties from arguing their proposed constructions of the claims during trial. Indeed, the parties are hereby given notice that claim construction, in general, is an issue to be addressed at trial. Claim construction will be determined at the close of all the evidence and after any hearing. The parties are expected to assert all their claim construction arguments and evidence in the Petition, Patent Owner’s Response, or otherwise during trial, as permitted by our rules.

We now turn to the merits of Petitioner’s asserted Grounds of unpatentability.

D. Ground 1
Claims 1–5, 11, 17–20
Based on Kogelbauer

1. Kogelbauer

Kogelbauer is an Austrian published patent application. *See* Exs. 1005 (Austrian published application in German), 1006 (certified

English translation), 1007 (Translator's Declaration). We cite to the certified English translation, Ex. 1006.

Kogelbauer discloses a device “for conveying, metering and dispensing at least two material components (A, B) under pressure.” Ex. 1006, Abstract. The disclosed process involves conveying the material components from respective sources, such as containers; preparing the material components with regard to pressure and temperature; metering and, optionally, mixing the components; and finally dispensing the material components in separate or mixed form and applying the components to any surfaces or construction elements. *Id.* at 1:13–19.⁸ The application is preferably carried out by spraying. *Id.*

Kogelbauer states that the device disclosed is “continuously adjustable,” thus allowing metering ratios for “an unlimited number of material components.” *Id.* at 2:19–22. In particular, these material components include “liquid and viscous material components, e.g., paints and varnishes as well as various plastics (polyester, polyurethane, various synthetic resins, etc.), further gaseous material components (e.g. CO₂) and solid components (e.g. quartz powder) and mixtures of [these] components.” *Id.* at 2:23–28.

Figure 1 from Kogelbauer, annotated by Petitioner, is reproduced below.

⁸ Citations are to page:line number.

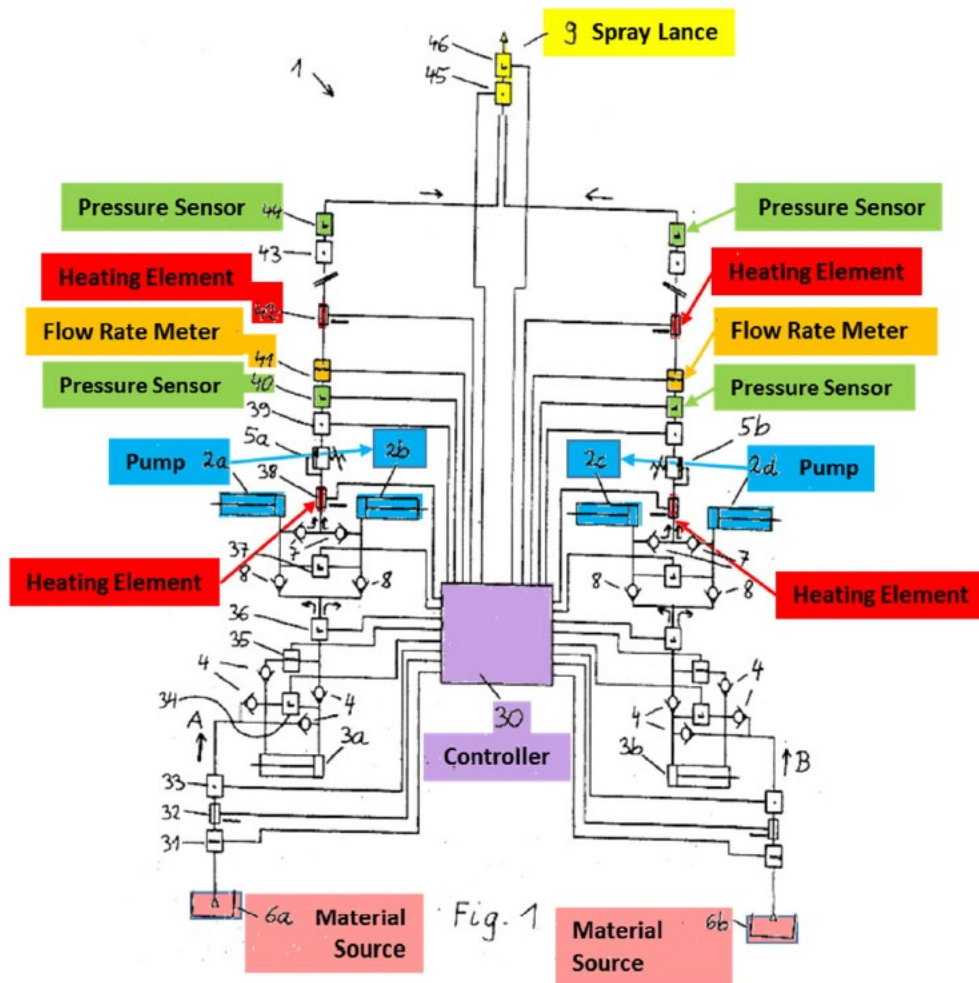


Fig. 1 from Kogelbauer, annotated by Petitioner (Pet. 21), is a schematic view of an embodiment of Kogelbauer's disclosed device. Ex. 1006, 8:12–13.

As shown in Figure 1, material components A and B each have their own material sources 6a and 6b⁹, respectively. The two branches for processing materials A, B are illustrated as symmetrical. Ex. 1006, 9:7–8.

⁹ Kogelbauer refers to material components A and B, with capital letters, but refers to the structures for processing each material component, as shown in Figure 1, with lower case letters.

The disclosed device includes “at least one piston cylinder pump for each material component.” *Id.* at 3:25–26. In a preferred disclosed embodiment, “two piston cylinder pumps are provided for each material component.” *Id.* at 4:12–14.

To be able to set and regulate the temperature of the material components independently of one another, Kogelbauer provides heating elements installed in the feed lines. *Id.* at 6:11–15. Material components A, B from the material sources are preheated by heating elements 32 designed as heat exchangers. *Id.* at 9:18–19. These heating elements can independently heat the respective material components A, B. *Id.* at 9:20–21.

Respective pump 3a, 3b is provided for each material component A, B. *Id.* at 9:26–27. These pumps draw material components A, B from material source 6a, 6b and bring each component to a first pressure level, which is measured by means of pressure sensor 34. *Id.* at 9:27–30.

After material components A, B pass pump 3a, 3b, each component is fed into “main pumps” 2a, 2b (for component A) and 2c, 2d (for component B), in which the mixing ratio and output pressure of material components A, B are set. *Id.* at 10:8–19. According to Kogelbauer, “the metering ratios do not change during operation.” *Id.* at 4:5. Kogelbauer also discloses, however, that a feature of the disclosed device is that “[t]he metering ratios of the different material components are continuously adjustable and also adjustable during operation.” *Id.* at 15:24–26.

Components A, B then pass through heating element 38, temperature sensor 39, pressure sensor 40, flow rate meter 41, heating element 42, temperature sensor 43, and pressure sensor 44. *Id.* at 10:22–27. Thereafter, material components A, B are dispensed jointly by a dispensing device 9, such as a spray lance. *Id.* at 10:27–29.

Controller 30 evaluates the signals from all temperature and pressure sensors and controls the heating elements, pumps, ventilation, and other parameters. *Id.* at 11:8–15; *see also id.* at 21:16–17 (“electronic control device (30) is provided for processing the output signals of the sensors”).

2. Analysis *Independent Claims 1 and 20*

Petitioner provides a clause-by-clause analysis of independent claim 1, asserting where each element or limitation is disclosed or suggested in Kogelbauer. Pet. 28–45.¹⁰ A similar analysis is provided for independent method claim 20 (*id.* at 56–69), as well as for the challenged dependent claims. Patent Owner presents no persuasive argument or evidence contesting Petitioner’s analysis, except for clause 1[n] and the corresponding clause in claim 20, clause 20[i]. *See* Prelim. Resp. 5, 9 (“Kogelbauer does not disclose or render obvious independent claim element 1[n]’s requirement of ‘a processor . . . configured to vary the output of the second pump in real time’ or claim element 20[i]s requirement of ‘controlling the second pump in real time’”).

Clause 1[n] is the last clause in claim 1 and requires:

a processor connected to the first pump, the second pump, the first pressure sensor, the second pressure sensor, the third pressure sensor, the fourth pressure sensor, the first flow rate sensor, and the second flow rate sensor and configured to vary the output of the second pump in real time in response to signals from the pressure sensor, the first flow rate sensor and the second flow rate sensor.

¹⁰ Petitioner identifies each clause of the challenged claims, following the preamble, with a lettered designation. *See* Ex. 1004. For claim 1, the lettered paragraphs are designated “1[a]–1[n].” Ex. 1004, 1. We will refer to these designated clauses when helpful to do so.

Ex. 1001, 5:24–31; Ex. 1004, 1. Petitioner acknowledges that “Kogelbauer does not explicitly state that controller 30 adjusts pumps 2a-2d in response to the signals received from the flow rate sensors.” Pet. 44 (claim 1), 69 (claim 20). Petitioner asserts, however, that “Kogelbauer discloses that the flow rate sensors are connected to the controller . . . and that ‘[e]xcellent operational safety and usability of the application device . . . are achieved by providing sensors in the flow paths of the material components that detect the presence of material.’” Pet. 44, 69 (citations omitted). Petitioner then argues that “[a] POSA^[11] would have understood that flow rate meters are used to detect the presence of material and, if not inherent in Kogelbauer, would have found it obvious to have controller 30 receive and analyze the signals sent by those sensors and, in real time in response, vary the output of pumps 2a-2d.” *Id.* at 44–45 (citing Ex. 1003 ¶ 91), *id.* at 69 (citing Ex. 1003 ¶¶ 91, 141).

Dr. Rockstraw’s opinion testimony supports Petitioner’s assertions.

Dr. Rockstraw testifies that:

A POSA would have understood that controller 30 is connected to the first and second pumps, the first, second, third, and fourth pressure sensors, and first and second flow rate sensors because Kogelbauer explains that the controller 30 “evaluates the signals from *all* temperature and pressure sensors and controls the heating elements, the pumps, the ventilation, etc.”

Ex. 1003 ¶ 89 (citing Ex. 1006, 11:7–10, 11:20–21, Fig. 1). Dr. Rockstraw then testifies that “[i]t is my opinion that a POSA would have further

¹¹ An acronym commonly used in patent law jargon to mean a person of ordinary skill in the art. *See* 35 U.S.C. § 103 (stating a requirement for patentability is whether “the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains”).

understood that for a controller to evaluate or control a device, it has to be connected to that device.” *Id.* Dr. Rockstraw also testifies that “annotated Fig. 1 [included with his testimony] illustrates certain representative connections between the controller 30 and pressure sensors, flow rate sensors, and temperature sensors.” Ex. 1003 ¶ 89 (citing Ex. 1006, Fig. 1, 11:7–10, 11:20–21). Dr. Rockstraw’s annotated Figure 1 is reproduced below.

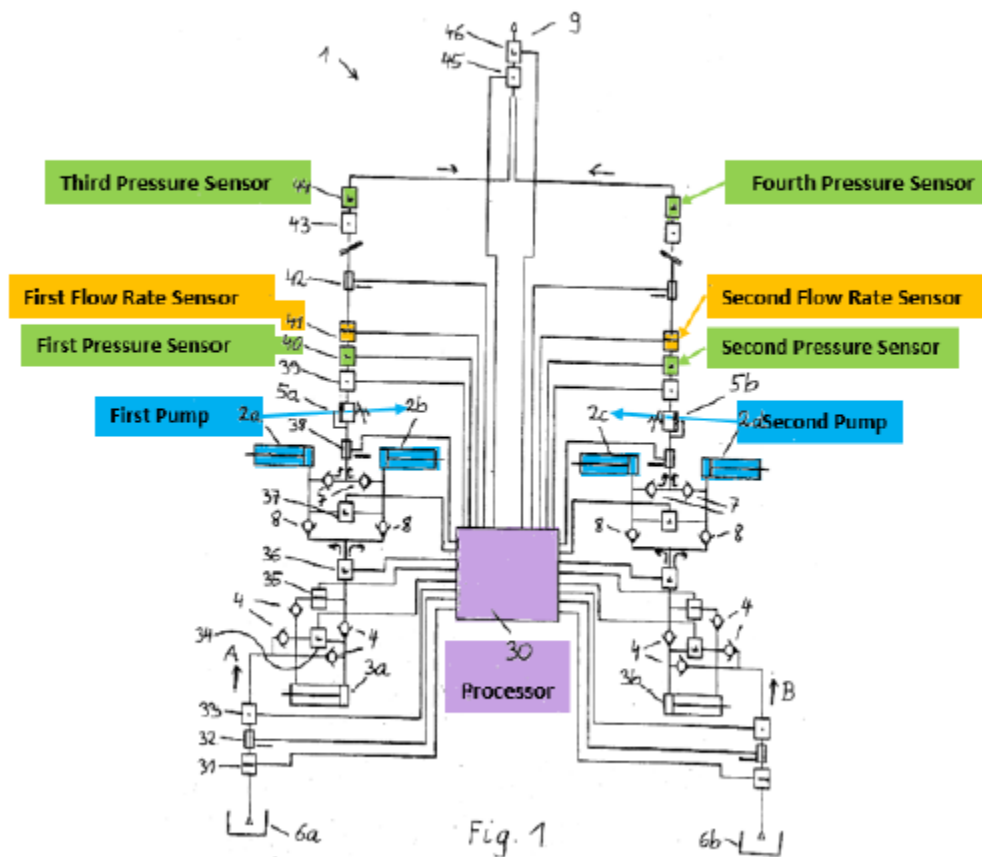


Fig. 1 from Kogelbauer (Ex. 1006) as annotated by Dr. Rockstraw in Ex. 1003 ¶ 89.

Additionally, Dr. Rockstraw testifies that “Kogelbauer also discloses that the pumps are continually adjusted during operation of the application device for accurate metering ratios of material components.” Ex. 1003 ¶ 90

(citing supporting disclosures in Kogelbauer, e.g., Ex. 1006, 15:24–26 (“The metering ratios of the different material components are continuously adjustable and also adjustable during operation.”)).

Patent Owner takes a different view of the evidence. According to Patent Owner, Petitioner’s “analyses of all challenged claims ultimately depend on its arguments and evidence that Kogelbauer renders obvious independent claim 1 (for that claim and all the dependent claims) and independent claim 20.” Prelim. Resp. 5. Patent Owner argues that Petitioner:

has failed to show that Kogelbauer renders obvious at least two key elements of those claims [claims 1 and 20]: (1) real time adjustment or control of the output of the second pump; and (2) controlling the output of the second pump in response to the flow rate sensors or the measured flow rates.

Id. (citing Ex. 1001, 5:24–31, 6:56–59). Based on this argument Patent Owner concludes Petitioner “has failed to show a reasonable likelihood that it will prevail as to any challenged claim.” Prelim. Resp. 5. Patent Owner did not submit any evidence to support its argument. Based on the evidence of record, we disagree with Patent Owner’s characterization of Kogelbauer’s disclosure.

Patent Owner concedes that both Kogelbauer and the invention disclosed and claimed in the ’996 patent use “positive displacement pumps, such as piston pumps, to pump the ‘A’ and ‘B’ liquids.” Prelim. Resp. 2–3. Patent Owner, however, focuses selectively on isolated passages from Kogelbauer regarding a preferred embodiment of the piston pumps’ operation without recognizing the broader disclosures in Kogelbauer. For example, Patent Owner argues that:

Kogelbauer's invention works by changing the stroke length of its piston pumps. Kogelbauer teaches adjusting the "metering ratios" (the relative flow rates of each liquid) between its piston cylinder pumps used for its liquids A and B by using two interlocking bars.

Prelim. Resp. 5. Patent Owner concludes that:

Kogelbauer discloses an apparatus for adjusting the stroke length (and thus the pumping rate) of the "A" pumps and the stroke length of the "B" pumps at the same time, to maintain a constant, set ratio between the flow of material A and the flow of material B. Kogelbauer is clear that the metering ratios (and therefore the pumped flow rate or pump output) are adjusted by adjusting the specific hinge point of the extendable bar section. Kogelbauer does not disclose any other method of adjusting the pump output. The only method Kogelbauer teaches to adjust the pumped flow rates is thus via changing the stroke length of each pump by adjusting the length of bar 13.

Prelim. Resp. 7 (citations omitted). According to Patent Owner, "Kogelbauer does not disclose or render obvious independent claim element 1[n]'s requirement of 'a processor . . . configured to vary the output of the second pump in real time' or claim element 20[i]'s requirement of 'controlling the second pump in real time . . .'" *Id.* at 9.

Patent Owner argues that "Kogelbauer's references to 'continuous' adjustment have nothing to do with on-the-fly, real time adjustment; rather, 'continuous' adjustment refers to the ability to select almost any metering ratio via continuous adjustment of the lever ratio between the two interlocked bars." Prelim. Resp. 10. Patent Owner cites no persuasive evidence to support this argument. *See Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1359 (Fed. Cir. 2018) (rejecting attorney argument as to the alleged understanding of one of skill in the art on an issue when no evidence was presented). Patent Owner concedes, however, that

“Kogelbauer does teach that the controller 30 ‘controls the pumps.’”

Id. at 12. Patent Owner argues that “Kogelbauer does not teach that it [controller 30] *adjusts the pumped flow rate* by controlling the pumps; adjustment is done solely by extending or retracting bar 13.” *Id.* (emphasis added).

Patent Owner speculates that “Kogelbauer’s reference to controlling the pumps *likely* references cycling them ‘on’ or ‘off’ as required when the spray lance trigger is depressed or released.” Prelim. Resp. 12 (emphasis added). Again, Patent Owner does not cite any persuasive evidence to support its speculation.

As discussed above, Kogelbauer discloses that “*controller 30* evaluates the signals from all temperature and pressure sensors and *controls* the heating elements, *the pumps*, the ventilation,” and other parameters. Ex. 1006, 11:8–15 (emphases added). Also, contrary to Patent Owner’s argument, Dr. Rockstraw testifies that “Kogelbauer also discloses that the pumps are continually adjusted during operation of the application device for accurate metering ratios of material components.” Ex. 1003 ¶ 90 (citing supporting disclosures in Kogelbauer, e.g., Ex. 1006, 15:24–26 (“The metering ratios of the different material components are continuously adjustable and also *adjustable during operation*.” (emphasis added))).

Patent Owner states that to “sum up” its arguments, “nothing in Kogelbauer supports Carlisle’s [Petitioner’s] contention that the controller 30 adjusts the output of Kogelbauer’s pumps in real time.” Prelim. Resp. 14. Patent Owner also argues that the lack of a connection between controller 30 and the “optional bar adjustment motor” indicates that “it is impossible for Kogelbauer’s controller to control or adjust the output of the second pump in real time,” as required by independent claims 1 and 20. *Id.* at 15.

The term “real time” appears only twice in the ’996 patent, once in claim 1 (Ex. 1001, 5:29) and once in claim 20 (*id.* at 6:56). The term “real time” does not appear in the written description. We recognize that in determining that claims 1 and 20 were patentable, the Examiner stated “[a]fter further consideration and search, Examiner was not able to find a system that teaches a processor that makes use of two flow sensors, and four pressure sensors to control two pumps and adjust their input in real time, as claimed.” Ex. 1002, 194.

It is Petitioner’s position that Kogelbauer discloses the claimed “real time” limitation. Pet. 17 (“In the reasons for allowance, the Examiner stated he ‘was not able to find a system that teaches a processor that makes use of two flow sensors, and four pressure sensors to control two pumps and adjust their input in real time, as claimed.’” (citation omitted)). According to Petitioner, Kogelbauer, “teaches each of these limitations.” *Id.* Petitioner asserts that “flow rate meters are used to detect the presence of material and, if not inherent in Kogelbauer, would have found it obvious to have controller 30 receive and analyze the signals sent by those sensors and, *in real time in response*, vary the output of pumps 2a-2d.” *Id.* at 45 (emphasis added; citing Ex. 1003 ¶ 91).

Dr. Rockstraw testifies:

Kogelbauer discloses that the flow rate sensors are connected to controller 30, Ex. 1006, at 7:12-21, 20:20-26, 21:15-17, and that “[e]xcellent operational safety and usability of the application device ... are achieved by providing sensors in the flow paths of the material components that detect the presence of material” Ex. 1006, at 7:12-21.

Ex. 1003 ¶ 91. Based on his analysis of Kogelbauer, Dr. Rockstraw concludes:

In my opinion, a POSA would have understood that flow rate meters are used to detect the presence of material in a fluid path. Thus, to the extent this limitation is not inherent in Kogelbauer, a POSA would have found it obvious to have controller 30 receive and analyze the signals sent by those sensors and, *in real time in response*, vary the output of pumps 2a-2d.

Id. (emphasis added); *see also* ¶¶ 140–141 (opining on claim 20).

Dr. Rockstraw also testifies that “[i]t is common practice to use a controller to monitor in real time one or more operating characteristics of a plural component mixing system for spray polyurethane foam using various sensors, and then, based on the reading of the sensors, adjust one or more operating characteristics.” Ex. 1003 ¶ 55 (citations omitted). As an example, Dr. Rockstraw testifies “a controller that is connected to flow rate meters downstream of pumps may adjust the drive assembly of the pumps in response to material component flow through the flow rate meters.” *Id.*

3. Conclusion for Claims 1 and 20 Based on Kogelbauer

Based on the evidence and analysis above, for purposes of this Decision, Petitioner has demonstrated that there is a reasonable likelihood it will prevail in its challenges to claims 1 and 20 based on Kogelbauer.

4. Dependent Claims 2–5, 11, 17–19 Based on Kogelbauer

Petitioner provides an element-by-element analysis of where each element in dependent claims 2–5, 11, and 17–19 is disclosed in, or would have been obvious in view of Kogelbauer. Pet. 45–55. Petitioner also provides a reason why it would have been obvious to modify Kogelbauer with a reasonable expectation of success, as proposed by Petitioner. *Id.* Petitioner also relies on the testimony of Dr. Rockstraw (Ex. 1003) for evidentiary support.

Patent Owner does not address any of dependent claims 2–5, 11, 17–19.

Accordingly, based on the arguments and evidence of Petitioner on the record before us, we determine, for purposes of this Decision, Petitioner has established a reasonable likelihood of prevailing on claims 2–5, 11, 17–19 based on Kogelbauer.

*E. Grounds 2–4
Claims 6, 7, 8–10, 12, 13–16*

We have summarized Grounds 2–4 and the references on which they rely above. Petitioner provides an element-by-element analysis of where each element in the challenged claims under each asserted Ground is disclosed in, or would have been obvious in view of the cited references. Pet. 69–86. Petitioner also provides a reason why it would have been obvious to modify Kogelbauer with a reasonable expectation of success, as proposed by Petitioner. *Id.* Petitioner also relies on the testimony of Dr. Rockstraw (Ex. 1003) for evidentiary support.

Patent Owner does not address any of dependent claims 6, 7, 8–10, 12, and 13–16 challenged in Grounds 2–4.

Accordingly, based on the arguments and evidence of Petitioner on the record before us, we determine, for purposes of this Decision, Petitioner has established a reasonable likelihood of prevailing on claims 6, 7, 8–10, 12, and 13–16 challenged in Grounds 2–4.

III. CONCLUSION

Taking into consideration the arguments in the Petition, the Preliminary Response, and the evidence of record, we institute an *inter partes* review on all challenged claims and on all asserted grounds.

Our review of the Petition under 35 U.S.C. § 314 is not to determine whether an individual asserted fact is indisputable or whether a preponderance of the evidence supports Petitioner. Our review is to determine whether the totality of the information presented in the Petition and Preliminary Response shows that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. “The ‘reasonable likelihood’ standard is a somewhat flexible standard that allows the Board room to exercise judgment.” Patent Trial and Appeal Board Consolidated Trial Practice Guide 53 (Nov. 2019), *available at* <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf>.

This is a decision to institute an *inter partes* review under 35 U.S.C. § 314. Our determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial, including all arguments and evidence in the Patent Owner’s Response,¹² Petitioner’s Reply, Patent Owner’s Sur-reply, or submitted otherwise during trial, as permitted by our rules.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is granted and an *inter partes* review is instituted for all challenged claims and on all asserted grounds; and

¹² See *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016) (explaining that a patent owner waives an issue presented in its preliminary response if it fails to renew the issue in its response after trial is instituted).

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review will commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2021-01256
Patent 10,159,996 B2

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