

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BLD SERVICES, LLC.,
Petitioner,

v.

LMK TECHNOLOGIES, LLC.,
Patent Owner,

Case IPR2014-00770
Patent 8,667,991

Before GRACE KARAFFA OBERMANN, SHERIDAN K. SNEDDEN,
and ZHENYU YANG, *Administrative Patent Judges*.

SNEDDEN, *Administrative Patent Judge*.

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

I. INTRODUCTION

BLD Services, LLC (“BLD”) filed a petition to institute an *inter partes* review of claims 1–37 (Paper 2; “Pet.”) of US 8,667,991 B2 (Ex. 1001; “the ’991 patent”). LMK Technologies, LLC (“LMK”) filed a patent owner preliminary response. Paper 7 (“Prelim. Resp.”). We instituted trial for challenged claims 1 and 5–37 on the following grounds of unpatentability asserted by Petitioner:

Ground	Challenged Claims	Basis	References
1	1, 5–26, 28, 30–35, 37	§ 103(a)	Kiest ’118, ¹ Kiest ’597, ² De Neef Instructions, ³ and De Neef Brochure ⁴
2	27, 29, 36	§ 103(a)	Kiest ’118, Kiest ’597, De Neef Instructions, De Neef Brochure, and Kempenaers ⁵

Decision to Institute (Paper 13, “Dec.”).

After institution of trial, the Patent Owner filed a Patent Owner Response (Paper 20, “PO Resp.”), to which Petitioner filed a Reply (Paper 28, “Reply”).

Petitioner relies upon the Declarations of Christopher W. Adams (Ex. 1008) (“Adams Decl.”) and David Fletcher (Ex. 1013) (“Fletcher Decl.”) in support of its

¹ U.S. Patent No. 6,994,118 to Kiest et al., issued February 7, 2006 (“Kiest ’118” or “the ’118 patent”) (Ex. 1002).

² U.S. Patent No. 5,765,597 to Kiest et al., issued June 16, 1998 (“Kiest ’597” or “the ’597 patent”) (Ex. 1003).

³ Installation Instructions, SWELLSEAL® WA, De Neef Construction Chemicals, Inc. (Rev. 3/2006) (“De Neef Instructions”) (Ex. 1004).

⁴ “Swellseal® Hydrophilic Waterstop Solutions,” De Neef Construction Chemicals, Inc. (“De Neef Brochure”) (Ex. 1005).

⁵ Kempenaers, P, “The pressure resistance of SWELLSEAL Sealant WA,” De Neef Conhem (September 5, 2005). (“Kempenaers”) (Ex. 1006).

Petition. Patent Owner relies upon the Declarations of Norman E. Kampbell (Ex. 2005) (“Kampbell Decl.”) and Larry W. Kiest, Jr. (Ex. 2006) (“Kiest Decl.”) to support its Patent Owner Response.

Oral argument was conducted on July 15, 2015. A transcript is entered as Paper 39 (“Tr.”).

In this Final Written Decision, we determine Petitioner has shown by a preponderance of the evidence that claims 1 and 5–37 of the ’991 patent are unpatentable for the reasons discussed below.

A. Related Proceedings

According to the parties, the ’991 patent is involved in the following lawsuit: *LMK Technologies, LLC v. BLD Services, LLC*, Case No. 1:14-cv-00956 (N.D. Ill. 2013, filed February 11, 2014). Pet. 2; Paper 6.

The following *inter partes* review proceedings also constitute related matters: Case No. IPR 2014-00768 (US 7,975,726) and Case No. IPR 2014-00772 (US 8,667,992).

B. The ’991 patent (Ex. 1001)

The ’991 patent discloses devices and methods for repairing the juncture between a main pipeline and a lateral pipeline in an underground sewer pipe. Ex. 1001, Abstract; 1:64–2:26. The disclosed devices include a liner tube assemblies that fit the juncture between a main pipe line and a lateral pipe line and a hydrophilic gasket or band that seals against entry of ground water at the juncture between the pipe lines. *Id.* at 2:9–26.

Figure 4 of the ’991 patent is provided below.

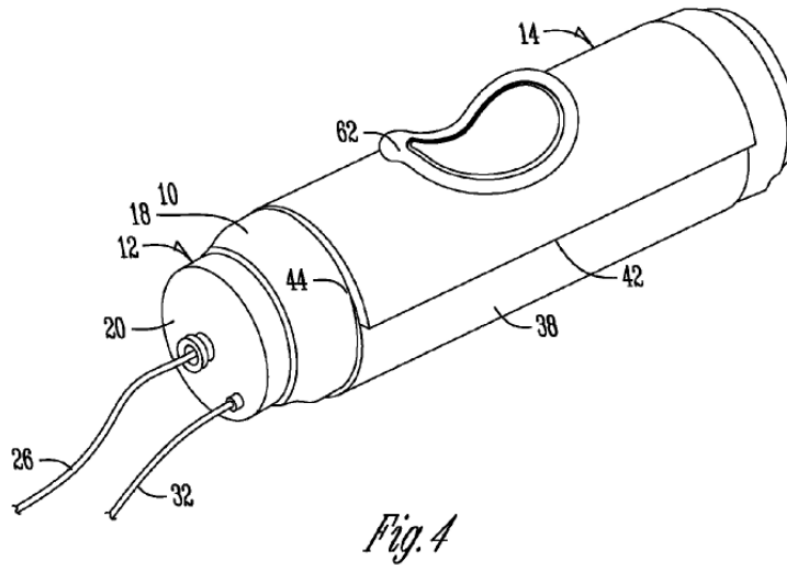


Figure 4 is a perspective view of repair assembly **10** for repairing a lateral pipe line and a main pipe line. *Id.* at 3:12–14. Repair assembly **10** includes launcher device **12** having mounted thereto liner assembly **14**. *Id.* at 3:29–61, 5:18–29. Main liner tube **38** is comprised of what is initially a flat sheet of material that is wrapped around the outside of the main bladder tube and launcher device **12**. *Id.* Main liner tube **38** includes overlapping edges **42**, **44**. *Id.*

Repair assembly **10** also houses bladder tube assembly **16** (not shown in Figure 1). *Id.* Bladder tube assembly **16** is shown in Figure 5, provided below.

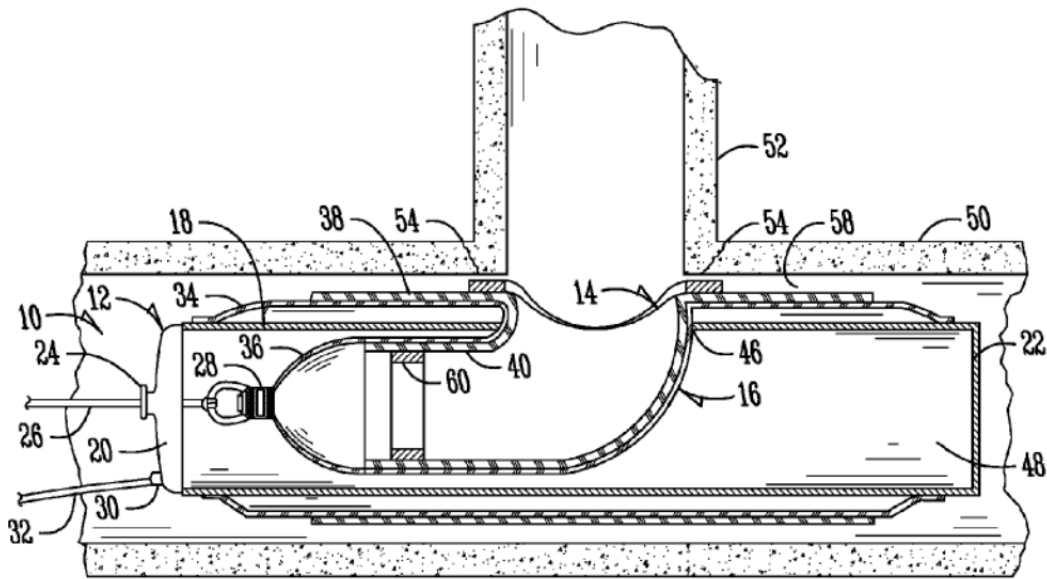


Fig. 5

Figure 5 is a sectional view of repair assembly **10** placed at the juncture of main pipe line **50** and lateral pipe line **52** in order to repair damaged portion **54**. *Id.* at 3:15–16. Bladder tube assembly **16** includes main bladder tube **34** and lateral bladder tube **36**. *Id.* at 3:47–62. Bladder tube assembly **16** is fitted on the interior of the liner assembly **14**, which includes main liner tube **38** and lateral liner tube **40**. *Id.* Lateral bladder tube **36** and lateral liner tube **40** are contained within launcher device cavity **48**. *Id.*

Figure 6 of the '991 patent is provided below.

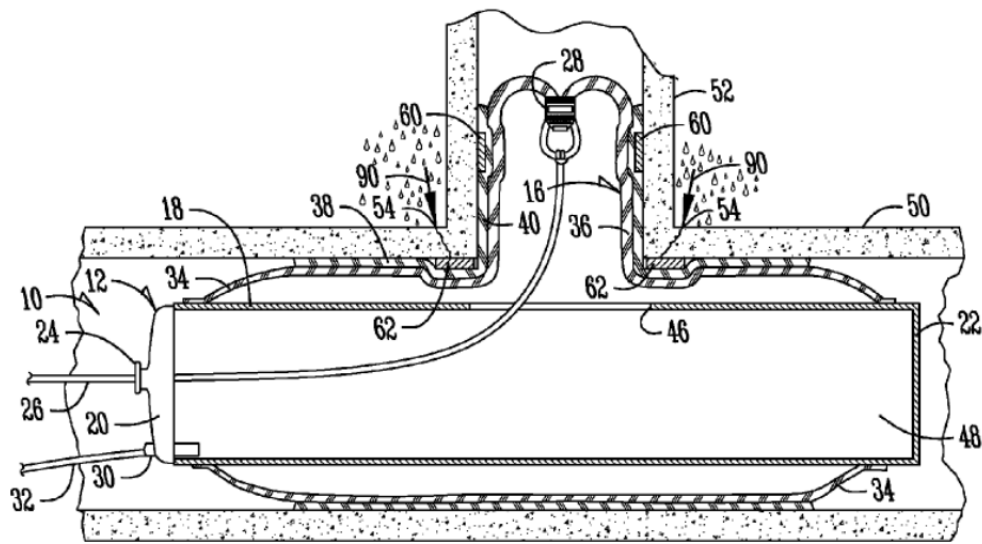


Fig. 6

Figure 6 shows the repair assembly **10** in the inflated position. *Id.* at 3:17–18. Lateral bladder tube **36** and the lateral liner tube **40** are launched outwardly into lateral pipe line **52** by increasing the air pressure in launcher device cavity **48**. *Id.* at 4:29–48.

Figure 6 also shows a band positioned on the main liner tube **38**. *Id.* at 5:18–46. In order to prevent seepage of ground water, a gasket **56** is positioned about a portion of liner assembly **14**. *Id.* The band extends around the juncture between main liner tube **38** and lateral liner tube **40**. *Id.* The band may be made of a hydrophilic material and swells in response to being exposed to water or other liquid. *Id.* Upon exposure to liquid, the band expands in a radial direction to effectively seal the area between the liner assembly and the juncture between main pipe line **50** and lateral pipe line **52**. *Id.*

C. Illustrative Claims

Independent claims 1, 11, 17, 23, and 31 are representative of the challenged claims, and are reproduced below (emphases added):

1. An apparatus for repairing a main pipe line and a lateral pipe line connected thereto and in communication therewith to form a pipe joint, comprising:

a bladder assembly comprising a main bladder tube and a lateral bladder tube extending from the main bladder tube;

a liner assembly comprising a main liner member at least partially surrounding the main bladder tube and a lateral liner tube extending from the main liner member;

the lateral liner tube and lateral bladder tube extendable to a position within the lateral pipe line with the lateral liner tube between the lateral pipe line and the lateral bladder tube; and

a gasket comprising a hydrophilic rubber, the gasket positioned at least partially surrounding the main liner member and the lateral liner member between the main liner member and the pipe joint, the gasket capable of swelling in reaction to contact with a liquid.

11. An apparatus for repairing a main pipe line and a lateral pipe line connected thereto and in communication therewith to form a pipe joint, comprising:

a bladder assembly comprising a main bladder tube and a lateral bladder tube extending from the main bladder tube;

a liner assembly comprising a main liner member at least partially surrounding the main bladder tube and a lateral liner tube extending from the main liner member;

the lateral liner tube and lateral bladder tube extendable to a position within the lateral pipe line with the lateral liner tube between the lateral pipe line and the lateral bladder tube; and

a band of hydrophilic paste disposed on the main liner member around the lateral liner member and between the main liner member and the main pipe line at the pipe joint.

17. A method of repairing a main pipe line and a lateral pipe line connected thereto and in communication therewith to form a pipe joint, comprising:

taking a bladder assembly including a main bladder tube and a lateral bladder tube;

taking a liner assembly including a main liner member and a lateral liner tube in communication with one another at a liner juncture;

impregnating the liner assembly with a material capable of curing and hardening;

applying a band of hydrophilic paste on the outside of the main liner member and around the lateral liner tube at the liner juncture;

expanding the bladder assembly to position the lateral liner tube against the lateral pipe line and the main liner member against the main pipe line, *with the band of hydrophilic paste between the main liner member and the main pipe line at the pipe joint.*

23. A method of repairing a main pipe line and a lateral pipe line connected thereto and in communication therewith to form a pipe joint, comprising:

taking a bladder assembly comprising a main bladder tube and a lateral bladder tube;

taking a liner assembly comprising a main liner member and a lateral liner tube in communication with one another at a liner juncture;

impregnating the liner assembly with a material capable of curing and hardening;

applying a hydrophilic paste to the liner assembly and around at least a portion of the liner juncture; and

expanding the bladder assembly to position the lateral liner tube against the lateral pipe line and the main liner member against the main pipe line;

wherein the hydrophilic paste is between the main liner member and the main pipe.

31. An apparatus for repairing a main pipe line and a lateral pipe line connected thereto and in communication therewith to form a pipe joint, comprising:

a bladder assembly comprising a main bladder tube and a lateral bladder tube extending from the main bladder tube;
a liner assembly comprising a main liner member at least partially surrounding the main bladder tube and a lateral liner tube extending from the main liner member and in communication with the main liner member at a liner juncture;
the lateral liner tube and lateral bladder tube extendable to a position within the lateral pipe line with the lateral liner tube between the lateral pipe line and the lateral bladder tube; and
a hydrophilic paste disposed on the liner assembly and at least partially around the liner juncture when the lateral liner tube is extended into the lateral pipe line.

Claims 5–10 depend directly or indirectly from claim 1. Claims 12–16 depend directly or indirectly from claim 11. Claims 18–22 depend directly or indirectly from claim 17. Claims 24–30 depend directly or indirectly from claim 23. Claims 32–37 depend directly or indirectly from claim 31.

II. ANALYSIS

A. Expert Testimony

As an initial matter, we note that the Petition was not accompanied by any expert declaration. “The Board expects that most petitions and motions will rely upon affidavits of experts.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,763 (Aug. 14, 2012). Especially in complex cases where obviousness is asserted as a ground of unpatentability, “expert testimony may be critical, for example, to establish the existence of certain features in the prior art or the existence (or lack thereof) of a motivation to combine references.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1240 n.5 (Fed. Cir. 2010) (citations omitted). But expert testimony is not a per se requirement—where the technology is simple, where the references are easily understandable without the need for expert

explanatory testimony, or where the factual inquiries underlying the obviousness determination are not in material dispute, expert testimony, though it might be helpful, may not be indispensable. *Allergan, Inc. v. Barr Labs., Inc.*, 501 F. App'x 965, 972 (Fed. Cir. 2013). In addition, a reason to combine prior art teachings may exist “in the content of the public prior art, in the nature of the problem addressed by the invention, or even in the knowledge of one of ordinary skill in the art.” *Princeton Biochemicals Inc. v. Beckman Coulter Inc.*, 411 F.3d 1332, 1338–39 (Fed. Cir. 2005). And in some cases, “the legal determination of obviousness may include recourse to logic, judgment, and common sense, in lieu of expert testimony.” *Wyers*, 616 F.3d at 1239.

Patent Owner challenges the credibility and qualification of Mr. Fletcher, an expert who submitted a declaration in support of Petitioner's Reply. *See, e.g.*, Paper 31, 1–2, 4. Petitioner, on the other hand, urges that we ignore the declaration of Mr. Kampbell, an expert for Patent Owner, due to his alleged bias and lack of qualification. Reply 13 & nn.5–6. Neither party, however, seeks to disqualify the expert for the other side. We, thus, consider the declarations from both Mr. Fletcher and Mr. Kampbell, according proper weight to the testimonies, taking account of the credibility challenges raised by each party.

B. Claim Interpretation

We interpret claims using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[.]” 37 C.F.R. § 42.100(b); *see also* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015) (“Congress implicitly approved the broadest reasonable interpretation standard in

enacting the AIA,”⁶ and “the standard was properly adopted by PTO regulation.”). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). “Absent claim language carrying a narrow meaning, the PTO should only limit the claim based on the specification . . . when [it] expressly disclaim[s] the broader definition.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed Cir. 2004). “Although an inventor is indeed free to define the specific terms used to describe his or her invention, this must be done with reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Neither Petitioner nor Patent Owner set forth an explicit construction of any claim term. Pet. 8; PO Resp. 7–8. A question arises, however, regarding the ordinary and customary meaning of “gasket” as understood in the art at the time of the invention. On that point, Patent Owner attempts to distinguish the “gasket” disclosed in Kiest ’597 from the “hydrophilic band” or “hydrophilic seal” disclosed in Kiest ’118. Specifically, Patent Owner argues that

The “gasket” 192 described in the ’597 patent is not a gasket in the conventional sense of the term. *See, e.g.*, Kampbell Decl. at ¶ 56 and Ex. D thereto. It does not provide any sort of compression seal between the liner and host pipe, but rather serves merely as a carrier for hydrophilic chemical grout (a liquid having a viscosity similar to that of milk) that will be dispersed from the open cell foam of the “gasket” upon inflation of the liner/bladder assembly. Kiest Decl. at ¶ 28; Kampbell Decl. at ¶ 56.

6 The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”).

PO Resp. 14. Thus, Patent Owner appears to argue that the ordinary and customary meaning of the term “gasket” requires the capability to form a compression seal and that Kiest ’597 does not disclose such a “gasket.” We are not persuaded, however. Even if we were to agree with Patent Owner and expressly construe the term “gasket” to require a compression seal capability, which we do not, Patent Owner fails to provide persuasive evidence to demonstrate that the gasket described in Kiest ’597 does not operate under the principles of compression. See Reply 13 (citing Fletcher Decl. ¶¶ 23–24) (indicating why the “gasket” in Kiest ’597, comprising open cell foam filled with rubber-like material, would have an element of compressibility and resiliency).

We further conclude that our explicit construction of the term “gasket” is not necessary. It is sufficient to say that Kiest ’597, a reference disclosing a device in the exact field of invention as the ’911 patent, and by the same inventor, expressly uses the term “gasket” to describe an object relied upon by Petitioner to meet the “gasket” element of the challenged claims.

We determine that no explicit construction of any specific claim term is necessary to render our decision on patentability of the challenged claims. See, e.g., *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. Prior Art Status of De Neef Instructions (Ex. 1004), De Neef Brochure (Ex 1005), and Kempenaers (Ex. 1006)

Section § 311(b) states that “[a] petitioner . . . may request to cancel as unpatentable 1 or more claims only on a ground raised under section 102 or 103

and only on the basis of prior art consisting of patents or printed publications.” The determination of whether a given reference qualifies as a prior art “printed publication” involves a case-by-case inquiry into the facts and circumstances surrounding the reference’s disclosure to members of the public. *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004). To qualify, a document must have been “‘sufficiently accessible to the public interested in the art’” before the critical date. *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989) (citation omitted). “A reference is publicly accessible ‘upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.’” *Kyocera Wireless Corp. v. ITC*, 545 F.3d 1340, 1350–51 (Fed. Cir. 2008) (citation omitted).

In our Decision to Institute, we determined that Petitioner presented sufficient information to show a reasonable likelihood that it would prevail on obviousness grounds that relied, in part, on De Neef Instructions, De Neef Brochure, and Kempenaers. This decision was made with the understanding that Petitioner would have the opportunity at trial to respond to Patent Owner’s contentions and/or evidentiary objections with supplemental evidence under 37 C.F.R. § 42.64(b)(2) and/or supplemental information under § 42.123(a). Dec. 11. In its Response, Patent Owner argues that Petitioner failed to provide sufficient evidence to establish that De Neef Instructions, De Neef Brochure, and Kempenaers constitute prior art printed publications. PO Resp. 54–59. As such, Patent Owner contends that De Neef Instructions, De Neef Brochure, and Kempenaers are not properly relied upon by Petitioner in their asserted obviousness grounds. *Id.*

Petitioner, in its Reply, responds not with any additional evidence, but rather, with attorney argument, which in this case is insufficient to carry Petitioner's burden of proving public availability by a preponderance of the evidence. Reply 5–6; *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1379 (Fed. Cir. 2015) (Petitioner has the ultimate burden of persuasion to prove unpatentability by a preponderance of the evidence).

Having reviewed the parties' arguments and supporting evidence, we determine that Petitioner has not satisfied its burden to prove that De Neef Instructions and Kempenaers are printed publications. We determine, however, that Petitioner has satisfied its burden to prove that De Neef Brochure is a printed publication and thus available as prior art. Our reasoning follows.

1. De Neef Instructions and Kempenaers

With regard to De Neef Instructions (Ex. 1004), Patent Owner contends that Ex. 1004 bears no indication that it was publicly disseminated, and the Petition presents no supporting documentary evidence showing that it was publicly disseminated. The only indicia resembling a date of Ex. 1004 is the "Rev. 03/2006" on page 3 following the last line of text.

PO Resp. 55.

With regard to Kempenaers (Ex. 1006), Patent Owner contends that Ex. 1006 also bears no indication that it was publicly disseminated, and Petitioner has presented no supporting documentary evidence showing that it was publicly disseminated. The only indicia resembling a date of Ex. 1006 is the "09/05/2005" on page 3. It is unclear what this date represents.

Id. at 59.

Patent Owner further notes that Petitioner has provided no evidence, other than Exhibits 1004 and 1006 themselves, to establish either exhibit as a prior art printed publication. *Id.* at 56.

We agree with Patent Owner that the dates found on De Neef Instructions and Kempenaers, without more, are insufficient to establish either De Neef Instructions or Kempenaers as prior art. Petitioner has not provided sufficient evidence to show that the documents were publicly available or accessible by the public prior to the critical date. Based on the record before us, we determine that Petitioner has not provided competent evidence to qualify either De Neef Instructions or Kempenaers as a “printed publication.” Accordingly, we will not consider either De Neef Instructions or Kempenaers in our determination on the patentability of any challenged claims.

2. De Neef Brochure

Petitioner provides a declaration from Christopher W. Adams, an attorney with Patton Boggs LLP and counsel for Petitioner. Ex. 1008, 1. Mr. Adams indicates that the De Neef Brochure was located in a Google search using a custom date range of “01/01/1990” to “03/31/2007.” *Id.* at 2. Mr. Adams testifies that Annex 2 of Ex. 1008 “is a true and correct copy of the results” of the search he performed using Google’s search engine. *Id.* at 3. The Google search results indicate that De Neef Brochure was made available as a PDF file on the internet by at least January 1, 2007. *Id.* at Annex 2. Mr. Adams further notes that the metadata of the PDF file indicated that De Neef Brochure was created on “03/13/2006 6:48:56 PM” and was last modified on “03/13/2006 6:57:02 PM.” *Id.* at 3, Annex 2.

Patent Owner does not contest the search conducted by Mr. Adams or the search results he obtained. Rather, Patent Owner contends that “mere publication on the Internet does not mean that a document was available as of January 1, 2007 such that persons interested and ordinarily skilled in the art, exercising reasonable diligence, can locate it.” PO Resp. 58. We disagree. “When considering whether a given reference qualifies as a prior art ‘printed publication,’ the key inquiry is whether the reference was made ‘sufficiently accessible to the public interested in the art’ before the critical date.” *Voter Verified, Inc. v. Premier Election Solutions, Inc.*, 698 F.3d 1374, 1380 (Fed.Cir.2012) (citation omitted). Here, Petitioner presents evidence in the form a Google search report and a declaration by Mr. Adams describing the search conducted and how the results should be interpreted. Ex. 1008. Mr. Adams explains that metadata of the PDF file indicates that it “was created on ‘03/13/2006 6:48:56 PM’ and was last modified on ‘03/13/2006 6:57:02 PM,’” that he used “the Google Search Tools to enter a Custom date range for the query from ‘01/01/1990’ to ‘03/31/2007,’” and that “[t]he Google search results indicate that this document was posted on this site by at least January 1, 2007.” Ex. 1008 (citing Annex 2, 3). Thus, the search results indicate that De Neef Brochure was indexed by the Google search engine and became available worldwide on the internet via direct link by at least January 1, 2007. *Id.* at Annex 2. *Voter Verified*, 698 F.3d at 1381 (search engine availability constituting indexing and publication).

Patent Owner further contends that Mr. Adams is an interested party and that his declaration alone is insufficient to establish that De Neef Brochure constitutes a prior art printed publication. PO Resp. 57–58 (citing *Checkpoint Sys., Inc. v. All-Tag Sec. S.A.*, 412 F.3d 1331, 1339 (Fed. Cir. 2005) (“Physical, documentary, or

circumstantial evidence, or reliable testimony from individuals other than the alleged inventor or an interested party, may corroborate.”)). We are not persuaded that Mr. Adams, outside counsel for Petitioner, is an interested party. Patent Owner does not provide any evidence to show that Mr. Adams has a recognizable stake in the outcome of this proceeding and does not cite any authority to support the contention that an attorney representing a party in a case may be considered an interested party.

Given the record before us, we find the evidence of record sufficient to conclude that De Neef Brochure was publicly available worldwide on the internet by the critical date and therefore qualifies as a prior art “printed publication” under § 102(b).

D. Asserted Obviousness Grounds

1. Law of Obviousness

Obviousness is a question of law based on underlying determinations of fact. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *Richardson-Vicks Inc. v. Upjohn, Co.*, 122 F.3d. 1476, 1479 (Fed. Cir. 1997). A patent may not be obtained if 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 the subject matter pertains. 35 U.S.C. § 103(a). 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham*, 383 U.S. at 17–18.

In *KSR Int'l Co. v. Teleflex Inc.*, the Supreme Court stated that an invention may be found obvious if trying a course of conduct would have been obvious to a person having ordinary skill:

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

550 U.S. 398, 421 (2007). “*KSR* affirmed the logical inverse of this statement by stating that § 103 bars patentability unless ‘the improvement is more than the predictable use of prior art elements according to their established functions.’” *In re Kubin*, 561 F.3d 1351, 1359 (Fed. Cir. 2009) (citing *KSR*, 550 U.S. at 417).

2. Level of Ordinary Skill

Petitioner contends that a person of ordinary skill in the art at the time of the '991 patent invention “would have at least an undergraduate degree in engineering and/or ten years of experience in the pipe repair and/or pipeline installation industry.” Pet. 8. Patent Owner points out that Petitioner does not cite any support for this assertion. PO Resp. 8.

The skill-level determination is an important guarantee of objectivity in an obviousness analysis. *Graham*, 383 U.S. at 17. Usually, we expect evidence, such as affidavits of experts, to aid our analysis in this respect. Sometimes, however, the prior art may reflect an appropriate skill level. *Litton Indus. Products, Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163–64 (Fed. Cir. 1985). Such is the case here. *See, e.g.*, Ex. 1002, 1:6–2:28 (discussing methods for repairing damaged pipe lines using liner tubes impregnated with a liquid material capable of curing

and hardening and hydrophilic bands); Ex. 1003, 4:6–23 (discussing methods for repairing the juncture of a lateral sewer pipe and a mainline sewer pipe by inverting a preliner tube to a position where a gasket impregnated with grout forms a water tight seal between the preliner tube and the sewer pipes).

Patent Owner asserts “the relevant art is sewer pipe renewal and particularly trenchless, cured-in-place pipelining” (PO Resp. 8), and one of ordinary skill in the art is “someone with knowledge of cured-in-place pipelining materials and techniques, and at least several years of experience involving the design and application of cured-in-place pipelining technologies” (*id.* at 8 (citing Ex. 2005 ¶ 21)). For purpose of this Decision, we generally accept Patent Owner’s definition of the art and the statement of the level of skill, with one modification. We determine that an ordinary artisan does not have to be experienced in both designing and applying the technology.

As Patent Owner recognizes, hands-on experience, rather than formal education, serves better in the field of sewer pipe repair. PO Resp. 7–8. Further, Patent Owner’s own document supports our modification. Indeed, ASTM F 2561-06, an alleged “industry standard specifying the arrangement of the ’118 patent” (PO Resp. 24), states that the practice is for use by “designers *and* specifiers, regulatory agencies, owners, and inspection organizations who are involved in the rehabilitation of sewer service laterals and its connection to the main through the use of a resin-impregnated tube installed within an existing sewer lateral” Ex. 2005, Exhibit B, 2 (emphasis added). Thus, in this respect, we agree with Petitioner that an ordinary artisan would include both “designers and field engineers, including those that were specifying repair methods and procedures along with overseeing on-site repairs and who may not publish all their work.” Reply 2; Fletcher Decl. ¶ 4.

3. Content of the Prior Art

a. Summary of Kiest '118 (Ex. 1002)

Kiest '118 discloses a device using hydrophilic seals for repairing damage that occurs at the junction between the lateral pipe line and the main pipe line of sewer pipe. Ex. 1002 1:6–24. Figure 2 of Kiest '118 is provided below.

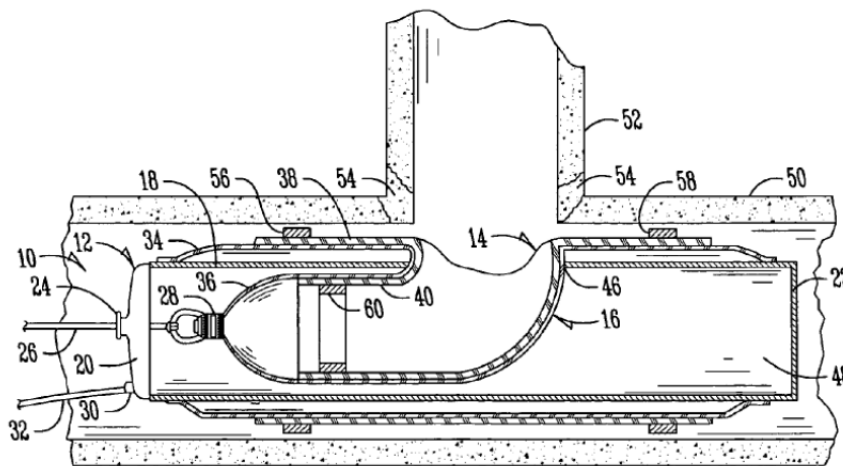


Fig.2

Figure 2 is a sectional view of main pipe line **50** and lateral pipe line **52** showing the device of Kiest '118. *Id.* at 4:1–2. The device of Kiest '118 comprises bladder assembly **16** having main bladder tube **34** and lateral bladder tube **36**. *Id.* at 4:37–65. Liner assembly **14** comprises a main liner tube **38** and lateral liner tube **40**. *Id.* Main liner tube **38** comprises an initially flat material wrapped around the outside of carrier tube **12** having overlapping edges **42**, **44**. *Id.* Lateral liner tube **40** is contained within the carrier tube cavity **48**. *Id.* Lateral bladder tube **36** is contained within the cavity **48** of carrier tube **12** and surrounds the lateral liner tube **40**. *Id.* Main liner tube **38** and lateral liner tube **40** both are comprised of a felt layer and a polymer layer. *Id.* at 4:59–61.

The device of Kiest '118 further includes hydrophilic seals or bands **56**, **58**, **60** to prevent seepage of ground water into the interior of main and lateral pipe line **50**, **52** through the damaged portion **54**. *Id.* at 4:46–58. Hydrophilic seals **56**, **58** are wrapped around the main liner tube **38** so as to hold the main liner tube **38** in a tube like configuration around the outside of carrier tube **12**. *Id.* Hydrophilic seal **60** may be optionally placed within the interior of the lateral liner tube **40**. Hydrophilic seals or bands **56**, **58**, **60** are made of a hydrophilic material capable of expanding in response to encountering ground water such as SWELLSEAL®. *Id.* at 5:28–34.

Figure 3 of Kiest '118 is provided below.

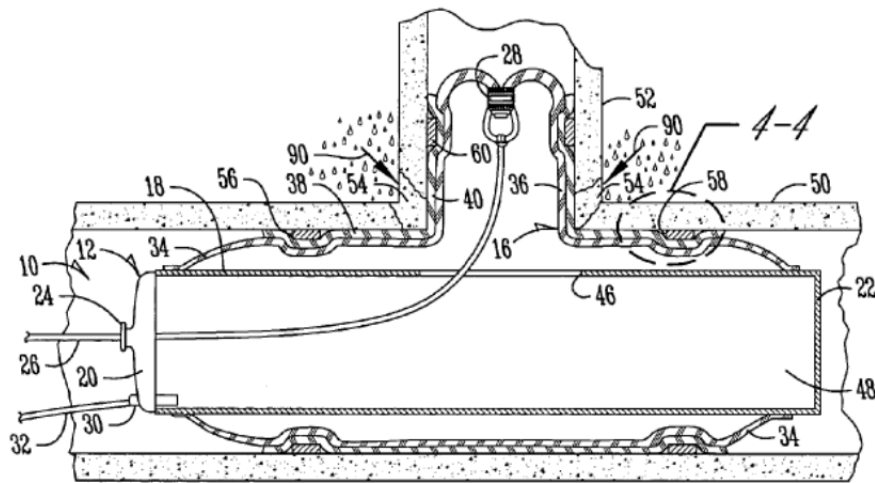


Fig. 3

Figure 3 is a sectional view of main pipe line **50** and lateral pipe line **52** showing the device of Kiest '118, but showing the liner tube in its inflated position. *Id.* at 4:3–4. Figure 3 shows “the first, second and third hydrophilic seals **56**, **58**, **60** are all positioned between the liner tube assembly **14** and the interior walls of main liner tube **50** and lateral liner tube **52**.” *Id.* at 5:19–22. “Upon encountering the

hydrophilic seals, the water causes the seals **56, 58, 60** to expand in both a radial inward direction and a radial outward direction [and] causes the seals **56, 58, 60** to form water tight seals *between the T-shaped or y-shaped liner assembly 14 and the interior walls of the main pipe line 50 and the lateral pipe line 52.*” *Id.* at 5:36–41 (emphasis added). Seal **60** is optional. *Id.* at 5:42–43.

b. Summary of Kiest '597 (Ex. 1003)

Kiest '597 discloses T-liner devices and methods for repairing damaged sewer pipe at a T-joint junction of a main pipe and lateral pipe. Ex. 1003, Abstract; 1:9–21; 9:20–11:49. The disclosed T-liner assembly is used to repair the junctures between the lateral pipelines and the main pipelines that commonly become damaged or destroyed, resulting in ground water infiltrating into the sewer system at the juncture. *Id.*

Figure 19 of Kiest '597 is reproduced below.

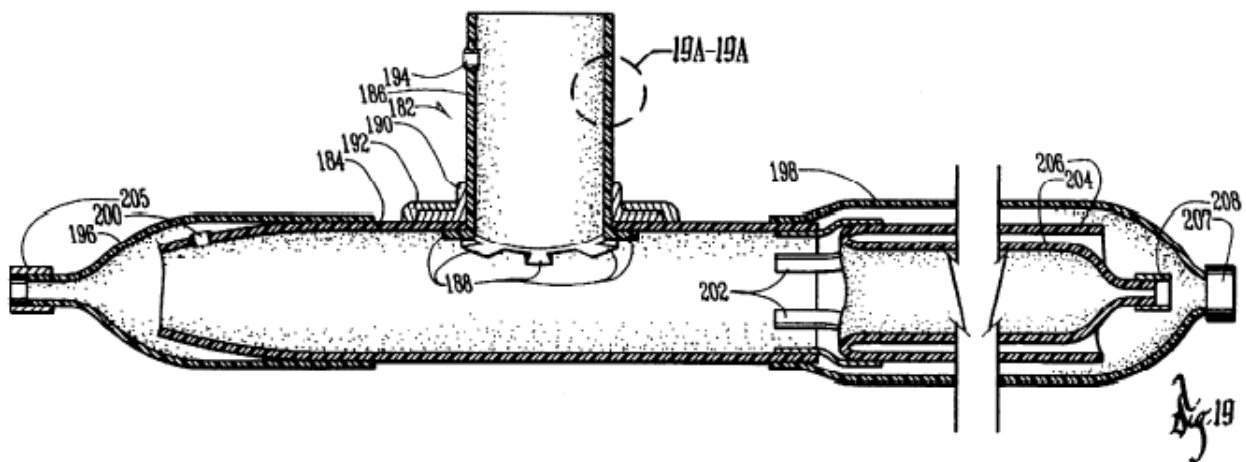


Figure 19 provides a sectional view of T-liner assembly **182** for use in a method for repairing a main lateral sewer pipe junction. *Id.* at 6:5–7. T-liner assembly **182** is formed by cutting a circular hole in main liner sleeve **184** to accommodate lateral liner sleeve **186**. *Id.* at 10:64 to 11:42. Lateral liner sleeve

186 is inserted into the circular hole of main liner sleeve **184** and the two sleeves are held together with the use of tabs **188** cut into lateral liner sleeve **186**. *Id.* Urethane collar **190** is then slid down over lateral liner sleeve **186** and is fused to the coating on lateral liner sleeve **186** and main liner sleeve **184** by heat or chemical adhesive. *Id.* Urethane collar **190** provides an airtight seal between the two liners **184**, **186**. *Id.* at 11:28–32.

Gasket **192**, in the shape of a donut, is then slid down over the lateral liner sleeve **186** until it reaches the junction between lateral liner sleeve **186** and main liner sleeve **184**. *Id.* at 11:32–42. Gasket **192** provides a seal between the liner sleeves and the main pipe, thereby forming a seal against groundwater. *Id.* Gasket **192** is made of absorbent material, such as an open cell foam impregnated with an uncured grout. *Id.* at 11:28–42 and 4:6–23.

Kiest '597 discloses the gasket is “positioned at the juncture between the lateral sewer pipe and the main line sewer pipe.” *Id.* at 4:18–21. In another embodiment, the gasket is positioned so that it is in contact with the juncture and the area to be repaired on the pipe. *Id.* at 9:43–44.

c. Summary of De Neef Brochure (Ex. 1005)

De Neef Brochure contains product information about SWELLSEAL® products, which is described in De Neef Brochure as available as a gunnable paste. Ex. 1005, 4.

4. Ground 1: Obviousness of Claims 1, 5–26, 28, 30–35, and 37 over the Combination of Kiest ’118, Kiest ’597, and De Neef Brochure⁷

Kiest ’118 discloses a T-shaped liner tube device used for the purposes of repairing damage that occurs at the juncture of a main pipe line and lateral pipe line. Ex. 1002, Abstract. The Kiest ’118 device is the same as the apparatus disclosed and claimed by the ’911 patent, except for the location of hydrophilic gaskets (also referred to as bands or seal), which are used for forming water tight seals between the liner tube and the pipe to be repaired. Dec. 16–17; Pet. 42–45. Kiest ’118 discloses positioning the gaskets between the liner assembly of the disclosed device and the interior walls of the pipe being repaired, but does not expressly describe or illustrate the seals as being positioned at the pipe junction. Ex. 1002, 51–5, 4:46–58, 5:36–41, Figs. 2–3. Rather, Kiest ’118 describes the gaskets as being “wrapped around the main liner tube.” *Id.* at 4:51–56. The claims of the ’911 patent, however, require the gaskets to be positioned at the liner juncture.⁸

⁷ De Neef Instructions and Kempnaers are part of Petitioner’s obviousness ground and relied upon for its disclosure of SWELLSEAL, a material identified in Kiest ’118 as a hydrophilic material capable of expanding in response to encountering ground water (Ex. 1002, 5:28–34). As discussed above, however, Petitioner failed to demonstrate that these references are prior art. We note, however, the exclusion of these references have minimal effect on Petitioner’s asserted grounds, as Kiest ’118 discloses the SWELLSEAL material and there is no dispute between the parties as to whether the SWELLSEAL material is a hydrophilic material according to the claims or whether it was known. *See e.g.*, Tr. 25 (“The additional DeNeef SWELLSEAL documents . . . are, in fact, merely cumulative and I think that’s been acknowledged [] in the subject patents that SWELLSEAL is and was a known water stop material,” statement of Christopher L. McKee, on behalf of Patent Owner); Ex. 1010, 63:1–15.

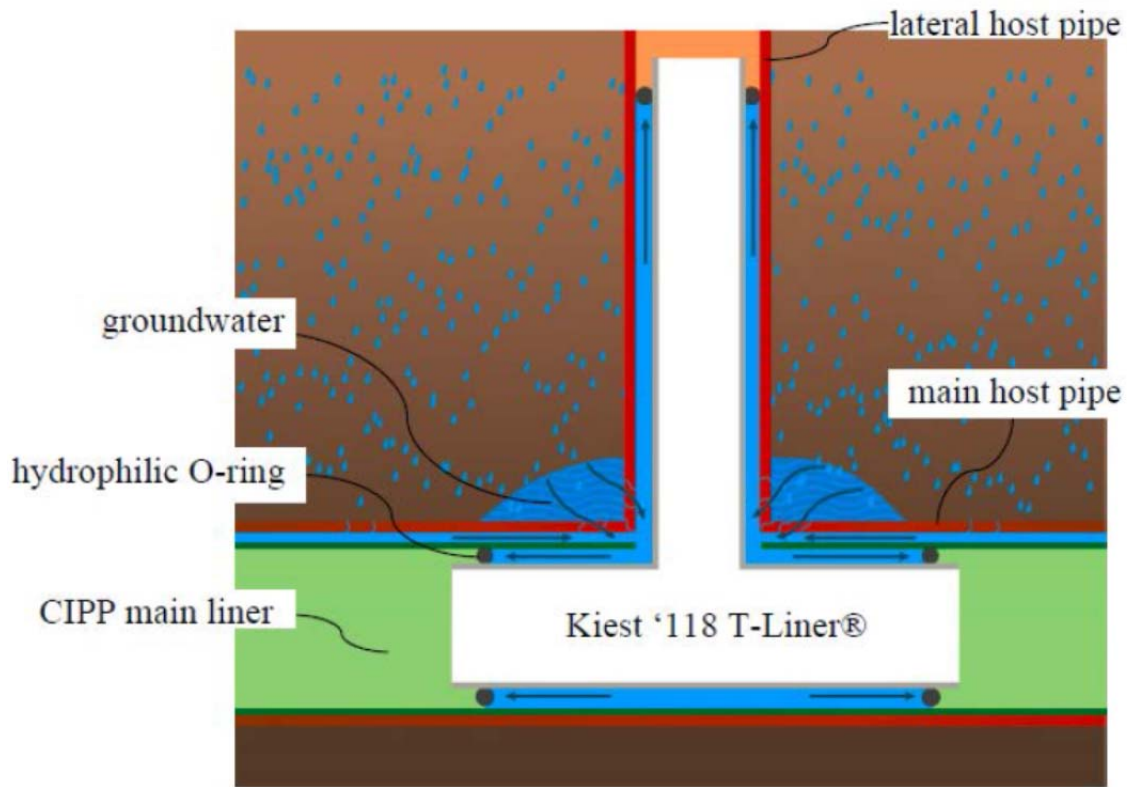
⁸ Each of independent claims 1, 11, 17, 23, and 31 contain specific language concerning the placement of a hydrophilic gasket, which may be generally

In our Decision to Institute, we agreed with Petitioner that the positioning of a gasket at the pipe joint is a feature disclosed in Kiest '597, which discloses an analogous T-shaped device for repairing damaged pipe. Dec. 16; Pet. 42–57; Ex. 1003. Specifically, Kiest '597 describes the use of a donut shaped gasket that is placed at the pipe junction to form a seal between the liner sleeves and the main pipe for the purpose of eliminating any ground water from infiltrating into the main line sewer pipe. Ex. 1003, 4:18–22, 11:32–42; Dec. 14. In light of this disclosure, we found that the prior art suggested that the use of gaskets at the location disclosed in Kiest '118 or Kiest '597 may be used in order to prevent ground water from infiltrating into the main pipe. Dec. 14–22. We concluded that the combination of Kiest '118 and Kiest '597 suggests that the “placement of hydrophilic bands at the liner juncture was a predictable variation within the technical grasp of a person of ordinary skill in the art.” Dec. 17 (citing *KSR*, 550 U.S. at 416 (“If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, § 103 likely bars its patentability.”)); Pet. 14.

The parties dispute whether a person of ordinary skill in the art would have modified the Kiest '118 apparatus by placing a gasket at the liner juncture, as taught in Kiest '597. In its Patent Owner Response, Patent Owner argues that “[t]he proposed obviousness rationale based on modifying the '118 patent technique in view of the '597 patent technique is untenable because the '597 technique’s principle of operation is completely different than the principle of

described as requiring a hydrophilic gasket to be positioned at the liner juncture and between the liner and pipe to be repaired. Claim 1, for example, requires a gasket “positioned at least partially surrounding the main liner member and the lateral liner member between the main liner member and the pipe joint.”

operation of the '118 patent techniques.” PO Resp. 49. This argument is aided by the description provided in the Patent Owner Response of the following illustration purported to depict the arrangement of Kiest '118. *Id.* at 21–25.



Id. According to Patent Owner, the above illustration shows the Kiest '118 device (T-Liner®), a cured-in-place pipe (CIPP) liner,⁹ and main host pipe to be repaired.

Id. The directional arrows show the purported flow of ground water. *Id.* Seals or bands are shown as hydrophilic O-ring. *Id.* With reference to the above illustration, Patent Owner contends that

The bands [of Kiest '118] are formed of a hydrophilic material and serve as end seals to confine groundwater that makes its way in between the liners and the interior pipe walls. The water is confined to a containment region set up in the general vicinity of the pipe

⁹ We acknowledge that the claims do not require a CIPP main liner. Reply 11.

junction. Kiest '118 at 5:34-51. That is, the end seals are meant to prevent groundwater . . . from flowing around the ends of the liners and into the sewer.

PO Resp. 39. According to Patent Owner, this arrangement allows groundwater to flow through the damaged pipe portions at the joint and in between the T-Liner and the original pipe, but is contained thereafter. *Id.* at 49.

Regarding Kiest '597, Patent Owner contends that “[t]he '597 patent technique embodies a principle that a seal is to be created outside of the pipe enveloping damaged pipe areas and in the surrounding earth in order to keep groundwater out of the pipe.” PO Resp. 47 (emphasis omitted). Thus, while the seals of the '118 patent device permit water to flow through the damaged portion of pipe, the '597 patent uses a seal to prevent water from flowing through the damaged portion of pipe. *Id.* at 47–49.

We are not persuaded by Patent Owner’s arguments that a different principle of operation exists between the Kiest '118 and Kiest '597 techniques. “[A] change in the basic principles” refers to change that is fundamental in scope so as to relate to scientific or technical principles under which the invention is designed to operate. *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959). Here, the techniques disclosed in Kiest '118 and Kiest '597 share a common goal, which is to prevent groundwater from entering into the main pipe. As noted by Petitioner, both Kiest '118 and Kiest '597 disclose the use of gaskets to stop water ingress from the damaged portion of the pipe junction. Reply 18. The relevant difference between the two techniques is the location of the gaskets. As noted above, the seals of the Kiest '118 device permit water to flow through the damaged portion of pipe where it is subsequently contained; the Kiest '597 device prevents water from entering through the damaged portion of pipe in the first place. PO Resp. 47–49.

Modifying the placement of gaskets in Kiest '118 to the pipe juncture may reduce the water containment area, as argued by Patent Owner, but the basic principle of using gaskets to prevent water from moving around the end of the T-line tube and into the main pipe remains the same. Hence, we are not persuaded by Patent Owners arguments premised on a different principle of operation between Kiest '118 and Kiest '597 techniques. PO Resp. 42–45; Kampbell Decl. ¶¶ 44–55. Furthermore, locating the gasket at the location where water undesirably enters the system—that is, at the damaged juncture—appears on this record to represent a common sense solution within the technical grasp of a skilled artisan. *KSR Int'l*, 550 U.S. at 421 (skilled artisan possesses ordinary creativity and is not an automaton).

We also are not persuaded by Patent Owner's arguments that the hydrophilic band seals of Kiest '118 are thin or narrow (e.g., sealing O-rings) and would not have been considered "suitable for directly targeting unpredictably located and configured cracks and voids at the pipe juncture for sealing the same." PO Resp. 45–49 (citing Kampbell Decl. ¶¶ 48–54); *see also id.* at 46 ("One of ordinary skill in the art at the time of the invention would understand that for proper function of the hydrophilic band seals of the '118 patent, one would want to keep the seals spaced from the juncture at a position where there could be a reasonable expectation of having undisrupted (reasonably uniform) internal pipe walls able to serve as seats for the compression sealing bands."). First, we note that Kiest '118 does not expressly describe the disclosed hydrophilic seals as "thin" or "narrow" and does not characterize the disclosed hydrophilic seals as O-rings. Ex. 1002; Reply 20. Second, we find persuasive Petitioner's argument that an ordinary artisan would have used a suitable thickness to cover the damage portion area that

commonly occurs at the pipe junctures. Ex. 1003, 9:20–25 (“Commonly the junctures between the lateral pipelines and the main pipelines become damaged or destroyed and result in ground water infiltrating into the sewer system at the juncture.”). That is, an ordinary artisan would have considered multiple factors when repairing the pipe juncture and that “[t]he ordinary artisan would have the wisdom to broaden the bands to achieve the results set forth in the ’118 and ’597 patents.” Reply 19–20 (citing Fletcher Decl. ¶ 21).

The Patent Owner questions whether “the Petition or the Institution Decision are suggesting movement of one of the spaced bands of the ’118 patent to the juncture region as a ‘predictable variation’ (as opposed to adding a new band).” PO Resp. 44. Here, we note that the challenged claims do not exclude the placement of seal according to Kiest ’118, but only require gaskets to be positioned at the liner juncture. Thus, whether the gaskets of Kiest ’118 are being replaced or added too, combining this teaching with the teaching of Kiest ’597 achieves an embodiment in which gaskets are positioned at the liner juncture, which is the disputed element recited in the claims of the ’911 patent. Furthermore, “[t]he test for obviousness is not whether the features of one reference may be bodily incorporated into the other to produce the claimed subject matter but simply what the combination of references makes obvious to one of ordinary skill in the pertinent art.” *In re Bozek*, 416 F.2d 1385, 1390 (CCPA 1969). We are persuaded that the combined teachings of the applied art would have suggested positioning the gasket at the damaged juncture, as suggested by Kiest ’597, when using a T-Liner as disclosed in Kiest ’118.

Patent Owner’s arguments related to the movement of the Kiest ’118 gaskets to the pipe juncture have been addressed above. With regard to a combination of

Kiest '118 and Kiest '597 resulting in the modification of the Kiest '118 device with an additional band at the pipe junction, Patent Owner contends that adding “a hydrophilic band of the '118 patent at the juncture of the '118 patent’s T-Liner would have served no purpose” or “would have been superfluous.” *Id.* at 38 (citing Kampbell Decl. ¶ 50). We are not persuaded that there is no purpose in combining a seal that prevents water from entering a pipe with a seal that contains water once it has entered into the pipe. In addition to maximizing the likelihood a seal is formed (Fletcher Decl. ¶¶ 21–22), the effect would be to reduce the containment region and therefore the hydrostatic pressures that could cause leakage or buckling of the liner. PO Resp. 25–26; Kampbell Decl. ¶ 46; Ex. 1010, 335–337; Reply, 19–21; Fletcher Decl. ¶¶ 21–22. In any event, here again, we are not persuaded that “[c]ombining the *teachings* of the references” necessarily involves a showing of “an ability to combine their specific structures.” *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973) (emphasis in original).

In view of the above, we find that it would have been obvious to one of ordinary skill in the art at the time of the invention to place the type of band or seal disclosed in Kiest '118 at the position disclosed in Kiest '597 to prevent water from entering through the damaged portion of pipe according to the principles of the techniques disclosed in Kiest '597. The combination results in an embodiment in which gaskets are used as gaskets in a position where gaskets have been used before. *KSR*, 550 U.S. at 401 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”); *see also id.* at 417 (“When a patent simply arranges old elements with each performing the same function it had been known to perform and yields no

more than one would expect from such an arrangement, the combination is obvious.”) (internal quotation omitted).

5. Ground 2: Obviousness of Claims 27, 29, and 36 over the Combination of Kiest ’118, Kiest ’597, and De Neef Brochure

Claims 27 and 29 both depend from independent claim 23, and claim 36 depends from independent claim 31. Claims 27, 29, and 36 require recited hydrophilic paste to be applied in the form of a band (claims 27 and 36) or ring (claim 29).

In its Response, Patent Owner does not present argument or evidence attempting to distinguish any feature of claims 27, 29, and 36 over the combination of Kiest ’118 and Kiest ’597, addressed above. Rather, Patent Owner relies on its arguments and evidence provided in support of the patentability of independent claims 23 and 36. PO Resp. 53. Accordingly, for the same reasons set forth above, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 27, 29, and 36 of the ’991 patent are unpatentable under 35 U.S.C. § 103(a) over the combination of Kiest ’118, Kiest ’597, and De Neef Brochure.

III. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that claims 1, 5–37 of the ’991 patent are unpatentable under 35 U.S.C. § 103(a) over the combination of Kiest ’118, Kiest ’597, and De Neef Brochure.

IV. ORDER

For the reasons given, it is

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ORDERED that claims 1, 5–37 of the '991 patent are determined to be unpatentable; and

FURTHER ORDERED that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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