UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/329,024	07/11/2014	Takahiro MORI	FUJI-0816	8104

37013 7590 06/02/2020

Rossi, Kimms & McDowell LLP
20609 Gordon Park Square
Suite 150
Ashburn, VA 20147

EXAMINER	
LAU, KEVIN	

ART UNIT	PAPER NUMBER
2683	

NOTIFICATION DATE	DELIVERY MODE
06/02/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EOfficeAction@rkmllp.com
mail@rkmllp.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TAKAHIRO MORI and AKIRA NAKAMORI

Appeal 2019-002134
Application 14/329,024
Technology Center 2600

Before JUSTIN BUSCH, LINZY T. McCARTNEY, and BETH Z. SHAW, *Administrative Patent Judges.*

BUSCH, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–16, which are all the claims pending. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm in part and enter a new ground of rejection. *See* 37 C.F.R. § 41.50(b).

[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Fuji Electric Co., Ltd. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The disclosed and claimed subject matter relates to alarm signal generator circuits and methods that generate signals indicating a type of failure and the phase in which the failure occurred. Spec. ¶ 3, Abstract. In particular, the claimed subject matter generates a signal indicating failure in an instrument (e.g., an intelligent power module) that includes a first time portion of the signal determinative of the type of failure (i.e., overheat, overcurrent, or undervoltage) and a second time portion of the signal determinative of the phase in which the failure occurred. Spec. ¶¶ 3, 5, 11, 17, 32. Claims 1 and 6 are independent claims, and representative claim 6 is reproduced below:

> 6. An alarm signal generation method for generating a signal indicative of a failure of an instrument that carries out a plurality of phase operations, the method comprising:
>
> determining a type of failure or a phase among a plurality of phases in which a failure has occurred; and
>
> generating, in accordance with the result of the determination, an alarm signal comprising a pulse corresponding to the type of failure or to the phase among the plurality of phases in which the failure has occurred,
>
> wherein the type of failure and the phase in which the failure has occurred can be determined from the generated alarm signal, the alarm signal including a first portion that occurs during a first portion of time of the alarm signal and a second portion that occurs during a second portion of time of the alarm signal different from the first portion of time, the first portion of the alarm signal being determinative of the type of failure that has occurred and the second portion being determinative of the phase in which the failure has occurred.

REJECTIONS

Claims 1, 2, and 6 stand rejected under 35 U.S.C. § 103 as obvious in view of Kumagai (US 2002/0039269 A1; Apr. 4, 2002), Kajima[2] (JP Pub. 2008-216040 A; Sept. 18, 2008), and Hu (US 2011/0176637 A1; July 21, 2011). Final Act. 2–6.

Claims 3 and 7 stand rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, and Okumura (US 5,869,996; Feb. 9, 1999). Final Act. 6–7.

Claims 4 and 8 stand rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, and Buxton (US 6,473,280 B1; Oct. 29, 2002). Final Act. 8.

Claim 9 stands rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, Okumura, and Buxton. Final Act. 8–9.

Claims 5 and 10 stand rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, and Isaka (JP 354-93411 A; July 24, 1979). Final Act. 9–10.

Claim 11 stands rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, Okumura, and Isaka. Final Act. 10–11.

Claim 12 stands rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, Buxton, and Isaka. Final Act. 12–13.

Claims 13 and 14 stand rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, Buxton, and Grek (US 2011/0148378 A1; June 23, 2011). Final Act. 13–15.

[2] We refer to the translations in the record for the Japanese references.

Claims 15 and 16 stand rejected under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, Grek, and Isaka. Final Act. 15–16.

OPINION

REJECTION OF CLAIMS 1, 2, AND 6

The Examiner rejects claims 1, 2, and 6 as obvious in view of Kumagai, Kajima, and Hu. Final Act. 2–6. Appellant argues the rejection of claims 1, 2, and 6 as a group. Accordingly, we select independent claim 6 as representative of claims 1, 2, and 6. *See* 37 C.F.R. § 41.37(c)(iv).

The Examiner finds Kumagai teaches the majority of the subject matter recited in representative claim 6. Final Act. 5 (citing Kumagai ¶¶ 2, 56). Specifically, the Examiner finds Kumagai teaches determining a phase and type of failure in a device and generating an alarm signal from which the phase and type of failure can be determined including a pulse corresponding to the phase or type of failure. Final Act. 5. The Examiner finds Kumagai does not explicitly disclose a single alarm signal including a first time portion determinative of a failure type and a second time portion determinative of the phase. Final Act. 5–6.

However, the Examiner finds Kajima discloses an alarm signal with two portions as recited in representative claim 6 and Hu teaches the general concept that two pieces of information can be contained in one signal. Final Act. 5–6 (citing Kajima ¶¶ 71, 77, 78; Hu ¶ 18). The Examiner finds the Kumagai-Kajima combination does not explicitly disclose that both the first (failure type) and second (failure phase) portions are included in one signal. Final Act. 6. The Examiner finds Hu teaches including two pieces of information in a single signal, and the Examiner concludes incorporating Hu's teaching into the Kumagai-Kajima system would have been obvious to

a person of ordinary skill in the art because combining signals results in "a more efficient signal communicating system." Final Act. 6; Ans. 5 (noting a "motivation to combine may be implicit and may be found in the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved" (citing *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1366 (Fed. Cir. 2006)) and that an implicit motivation to combine may exist if the modification "is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is . . . more efficient" (quoting *DyStar*, 464 F.3d at 1368)).

Appellant argues (1) Hu is not analogous art to Appellant's invention, (2) the Examiner's rationale is unsupported by a rational underpinning, and (3) a person of ordinary skill in the art would not have modified Kajima's system for detecting a type and phase of failure of a power distribution system with Hu's teachings to arrive at the claimed subject matter. Appeal Br. 5–12; Reply Br. 2–5.[3] We address each of these arguments below.

Analogous Art

Prior art is analogous if it is (1) from the same field of endeavor regardless of the problem addressed, or (2) even if the reference is not within the field of the inventor's endeavor, the reference is reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004).

Appellant contends Hu is not analogous art because it is neither in the same field of endeavor as Appellant's invention nor reasonably pertinent to

[3] Although Appellant's Reply Brief is not numbered, we refer to page numbers starting with the cover page as page 1.

the problems faced by the inventors of Appellant's invention. Appeal Br. 5–9; Reply Br. 2–3. Appellant asserts the inventors were "concerned with solving problems associated with a driver IC installed in an IPM to detect a temperature of, and current flowing through, an IGBT chip." Appeal Br. 7 (citing Spec. ¶ 5). Appellant notes that conventional systems using only one pad for outputting an alarm signal were not able to indicate the phase in which a failure occurred. Appeal Br. 7 (citing Spec. ¶¶ 9, 10).

Appellant argues Hu, on the other hand, relates to mobile terminals transmitting acknowledgments and negative acknowledgments over a communications network. Appeal Br. 7–8 (citing Hu ¶¶ 2–4, 7–11). Appellant argues that for these reasons, Hu is not from the same field of endeavor as the invention and not reasonably pertinent to the problems the inventors faced. Appeal Br. 8. Appellant asserts the Examiner applied the wrong test and failed to explain how Hu "would have logically commended itself to the inventor's attention" because the Examiner found Hu was reasonably pertinent to the problem faced by *Kumagai* and merely concludes Hu teaches the claimed features. Appeal Br. 8–9 (citing Final Act. 17; Advisory Action (Jan. 31, 2018)); *see* Reply Br. 1–2 (citing Ans. 3–4).

The Examiner explains that, "[a]s stated by appellant, the problem to be solved is conveying the phase information and type of failure using a single pad which is to be combined into the single alarm signal from the single terminal 100." Ans. 3–4 (citing Spec. ¶¶ 9, 10, 36, Fig. 1). The Examiner finds Hu is reasonably pertinent to the problem the inventors faced (i.e., including multiple pieces of information in a single signal from a single output) because Hu provides known techniques for conveying separate pieces of information within a single signal, specifically by time dividing the

signal. Advisory Act. 2. The Examiner further finds that, although Hu's signal is used for telecommunications, Hu's relied-upon disclosure would have logically commended itself to a person of ordinary skill in the art looking to solve a problem of combining two pieces of information into a single alarm signal output using a single terminal. Ans. 4.

We agree with Appellant's assertion that "the inventor of this application was concerned with solving problems associated with a driver IC [(integrated circuit)] installed in an IPM [(intelligent power module)] to detect a temperature of, and current flowing through, an IGBT [(insulated gate bipolar transistor)] chip." *See* Appeal Br. 7 (citing Spec. ¶ 5). This provides at least one reasonable characterization of Appellant's *field of endeavor*. However, even assuming Appellant's invention is in a different field of endeavor than Hu does not persuade us of Examiner error because the Examiner does not find Hu is in the same field of endeavor. Rather, the Examiner finds Hu is analogous art because it is reasonably pertinent to a problem addressed by the inventors of the Appellant's invention.

To the extent Appellant contends that the problem the inventors of Appellant's invention faced is limited to intelligent power module alarm signals, we disagree. As noted above, field of endeavor and reasonably pertinent to the problem faced are two *alternative* tests for determining whether prior art is analogous. Thus, even when in a different field of endeavor, prior art is analogous if it is reasonably pertinent to a problem faced by the inventors.

The Examiner noted the Specification indicates the problem addressed by Appellant's invention was conveying both the type and phase of a

detected failure in a single signal using a single pad. *See* Ans. 3–4 (citing Spec. ¶¶ 9, 10, 36). We agree.

After describing that an intelligent power module has only one pad for outputting an alarm signal, the Specification explains that adding another pad would add cost and increase the chip size. Spec. ¶ 9. The Specification then explains that "even though it can be determined that a failure has occurred, it is not possible to determine in which phase the failure has occurred." Spec. ¶ 9. Accordingly, at least one problem faced by the inventors of the presently claimed subject matter was indicating both the phase and type of failure in a single alarm signal. *See* Spec. ¶¶ 33–35, 53–54 (explaining that the known problems of conveying both the phase and type of failure in a single alarm signal is solved by encoding the failure phase (either using a pulse number or a pulse width) in one portion of an alarm signal and encoding the failure type in another portion of the alarm signal), Figs. 5, 6, 11.

Here, although from a different field of endeavor (i.e., mobile devices transmitting and receiving a code corresponding to a predetermined message over a telecommunications network), Hu addresses the same problem the inventors of the claimed subject matter faced—conveying multiple pieces of information in a single signal. Hu ¶ 18; *see* Hu ¶¶ 1, 11 ("proposing a more efficient ACK/NACK bundling scheme" and noting "the proposed solution has a wider application, and does not solely relate to an ACK/NACK bundling scheme"), Abstract; *see also* Hu ¶¶ 12–17 (describing communicating multiple pieces of data using an encoding scheme from which the receiving device is able to determine the signal's meaning).

Appellant's argument that the Examiner applied the wrong test is not persuasive. The Examiner finds Hu is analogous art because it is reasonably pertinent to the problem *faced by the inventors of the presently claimed subject matter*—namely, as discussed in the Answer and the preceding paragraphs, conveying phase and type information in a single signal. *See* Ans. 3–4 (citing Spec. ¶¶ 9–10). Thus, the Examiner identified a problem faced *by the inventors of Appellant's invention* and found that Hu was reasonably pertinent to this problem. *See* Ans. 3–4. This is consistent with Appellant's assertion that conventional systems used only one pad for outputting an alarm signal and, thus, could not indicate the phase in which a failure occurred. Appeal Br. 7 (citing Spec. ¶¶ 9, 10).

Rationale

Appellant argues the Examiner's conclusion that incorporating Hu's teaching of combining information into a single signal with the Kumagai-Kajima system would have been obvious because it would allow for a more efficient communication signaling system is insufficient. Appeal Br. 9–10; Reply Br. 3–4. Specifically, Appellant argues the Examiner's statement is conclusory, unsupported by rationale or evidence of record, mere conjecture, and could be applied to any proposed modification made to a signal communicating system. Appeal Br. 10; Reply Br. 4.

We are not persuaded the Examiner erred. The Examiner relies on Hu for the very limited teaching that it was known to combine two pieces of information into a single signal. Final Act. 6. Although the Examiner's statement that the combination would have been obvious to improve signaling efficiency sounds generic on its face, that is partly because the relied-upon teaching itself is the generic and basic concept of splitting a

signal into portions in time to convey different pieces of information. Hu ¶ 18 (explaining that "the signal may comprise two or more fields (i.e. two or more portions of the signal which can be distinguished from each other by the receiver, perhaps by their location within the signal, or by some other means)" and "[t]he fields may comprise distinct portions of the signal, for example, a chronologically first half (or 'hop') of the signal and a second half (or 'hop')").

Given this simple teaching and combination, the level of ordinary skill in the art, and the knowledge a person of ordinary skill in the art would possess, we are persuaded the provided rationale of more efficient signaling is sufficient. "When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); *see also id.* ("If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability."). "For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id.*

Resulting Combination

Appellant contends that, even assuming Hu is analogous art, a person of ordinary skill in the art would not have modified Kajima's track current based on Hu's disclosures. Appeal Br. 11–12; Reply Br. 4–5. Appellant argues Kajima teaches easily and reliably specifying an accident point using its track current such that there is no reason to modify Kajima based on Hu's unrelated teachings. Appeal Br. 11; Reply Br. 5.

As already noted, the Examiner relies on Hu merely to teach conveying two pieces of information using a single signal. Notably, the Examiner does not propose modifying Kajima's track current. Rather, as discussed above, the Examiner finds Kumagai teaches an alarm signal indicating a failure type and phase but does not *explicitly disclose* an alarm signal including *first and second portions* respectively determinative of a type of failure and a phase in which the failure occurred. Final Act. 5. The Examiner finds Kajima teaches an alarm signal having two distinct portions, one portion indicating the failure type and one portion indicating the failure phase. Final Act. 5–6 (citing Kajima ¶¶ 71, 77, 78). Therefore, the Examiner proposes modifying Kumagai's alarm signal, which already indicates both the type of failure and the phase during which the failure occurred, to explicitly include two distinct portions. Final Act. 5–6.

The Examiner also finds that, although Kumagai-Kajima teaches an alarm signal indicating both the failure type and the phase in which the failure occurred, neither Kumagai nor Kajima clearly indicates whether those two portions are part of one signal. Final Act. 6. Thus, the Examiner proposes modifying the Kumagai-Kajima alarm signal to explicitly incorporate Hu's teaching to combine multiple pieces of information into a single signal with each piece of information conveyed in a different time-portion of the signal. Final Act. 6.

Accordingly, contrary to Appellant's assertion, the Examiner does not propose modifying Kajima's track current at all. Rather, as discussed, the Examiner proposes modifying Kumagai's alarm signal to explicitly include two portions, as taught by Kajima. Kajima's track current itself is not part of the proposed Kumagai-Kajima system or method. Thus, the Examiner

does not propose modifying Kajima's track current with Hu's teaching. Instead, the Examiner's proposed modification merely incorporates Hu's teaching to combines the Kumagai-Kajima alarm signal's two portions into a single signal.

Moreover, because Hu discloses conveying two pieces of information in two distinct time-portions of the same signal, Hu also teaches a signal including a first portion determinative of a first piece of information and a second portion determinative of a second piece of information. *See* Hu ¶ 18. Therefore, given the Examiner's findings regarding Hu, the Examiner's finding that Kajima teaches two alarm signal portions is duplicative. Because Kumagai and Hu teach every limitation recited in representative claim 6, the Examiner's findings regarding Kajima are unnecessary, which renders moot Appellant's arguments regarding modifying Kajima. Thus, we alternatively affirm the Examiner's rejection of representative claim 1 as obvious over Kumagai and Hu. *See In re Kronig*, 539 F.2d 1300, 1302 (CCPA 1976) (Board limiting affirmance of obviousness rejection to three of the four references cited by the Examiner is not new grounds); *In re Bush*, 296 F.2d 491, 495–96 (CCPA 1961); Manual of Patent Examining Procedure § 1207.03(a)(II) (January 2018).

For these reasons, we are not persuaded the Examiner erred in concluding representative claim 6 would have been obvious in view of Kumagai, Kajima, and Hu or, alternatively, obvious in view of Kumagai and Hu. For the same reasons, we are not persuaded the Examiner erred in rejecting independent claim 1 or dependent claim 2, not argued separately with particularity. Accordingly, we sustain the Examiner's rejection of claims 1, 2, and 6.

REJECTION OF CLAIMS 3 AND 7

Dependent claims 3 and 7 additionally recite a latch circuit that receives a signal output from the instrument and a monostable multivibrator that outputs a pulse width corresponding to a failure type based on the timing transition of the latch circuit. Appeal Br. 17–18. The Examiner finds Kumagai teaches the recited latch circuit and Okumura teaches or suggests outputting "a pulse of a width corresponding to the type of failure based on the transition timing of the output of the latch circuit," as recited in claims 3 and 7. Final Act. 7. The Examiner takes official notice that monostable multivibrators were known in the art to create pulse width signals. Final Act. 7.

Appellant acknowledges that Okumura teaches pulse widths corresponding to failure types, but Appellant argues there is no disclosure that the "signals are output based on the transition timing of the output of the latch circuit, as required by claim 3." Appeal Br. 13.

We are not persuaded of error. The Examiner notes that nonobviousness cannot be established by attacking references individually when the rejection is based on a combination of references. Ans. 5–6 (citing *In re Keller*, 642 F.2d 413 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091 (Fed. Cir. 1986)). The Examiner finds Kumagai teaches the recited latch circuit. Final Act. 7. Appellant does not contest this finding, and Appellant acknowledges that Okumura generates alarm signals having pulse widths corresponding to failure types. Thus, by the nature of the proposed combination, the Examiner finds the *combination* of Kumagai and Okumura teaches or suggests outputting the alarm signals *based on* the transition

timing of the output of the latch circuit because the Examiner does not rely on Okumura as teaching the recited latch circuit.

A person of ordinary skill in the art would understand that the proposed combination includes Kumagai's latch circuit providing the latched alarm signal to Okumura's system that generates an alarm signal having pulse widths corresponding to the type of failure. Accordingly, we are not persuaded the Examiner erred in rejecting claims 3 and 7 as obvious in view of Kumagai, Kajima, Hu, and Okumura, and we sustain the Examiner's rejection of claims 3 and 7.

REJECTION OF CLAIM 13 AND 14

Dependent claim 13 additionally recites, in relevant part, "the second portion of the alarm signal includes a number of pulses that varies according to the phase in which the failure has occurred." Appeal Br. 19. The Examiner finds Buxton's counters, which determine the phase in which a failure occurred, disclose this limitation. Final Act. 14. Specifically, the Examiner finds "Buxton discloses using counters to count to determine the phase of failure, in which the count would be determined based on the number of pulses counted (as seen in Fig. 1 a-b)." Ans. 6.

Appellant argues the Examiner fails to consider the claim as a whole because neither Grek nor Buxton teach that their disclosed signals are part of an alarm signal. Appeal Br. 14. The Examiner notes that nonobviousness cannot be established by attacking references individually when the rejection is based on a combination of references. Ans. 5–6 (citing *Keller*, 642 F.2d 413; *Merck*, 800 F.2d 1091). The Examiner finds the combination of Kumagai, Kajima, and Hu teaches or suggests conveying both a failure type and the phase in which the failure occurred in a single alarm signal, and the

Examiner finds Grek and Buxton teach the particular way the type and phase are embedded or encoded within their respective portions of the signal. *See* Ans. 6.

As the Examiner noted, the Examiner merely relies on Grek and Buxton to teach or suggest particular methods for encoding data. *See* Final Act. 13–14. In particular, the Examiner finds Grek teaches using a pulse width to convey failure type and Buxton teaches using a number of pulses that vary according to the phase in which the failure occurred. Final Act. 13–14. Accordingly, Appellant's argument that Grek and Buxton do not teach their signals are part of an alarm signal does not address the Examiner's findings. Thus, we agree with the Examiner that Appellant's attack on the individual teachings of Grek and Buxton when the Examiner finds a combination of Kumagai, Kajima, Hu, Grek, and Buxton teaches or suggests the disputed limitations.

Appellant also argues Buxton's PHASE1FAIL and PHASE2FAIL signals merely toggle off and on in response to a failure in the first and second phase, respectively. Appeal Br. 14; Reply Br. 6. Appellant asserts Buxton fails to teach or suggest these signals teach or suggest a number of pulses that vary according to the phase. Appeal Br. 14; Reply Br. 6. Appellant further argues the circuits in Buxton's Figures 1a and 1b do not even identify the phase in which a failure occurred. Reply Br. 6.

Buxton discloses a failure detection circuit connected to a switching regulator. Buxton 2:6–14. In a multi-phase switching regulator, Buxton discloses either a single failure detection circuit that identifies only that a failure occurred in at least one of the phases or a failure detection circuit for each phase that output signals indicating that the respective regulator phase

failed. Buxton 6:63–7:1 (explaining that a single failure detection circuit used for all three phases "indicates a failure condition for the sensed parameter in at least one of the three phases," and, if "it is desirable to identify the specific phase in which a failure occurs, separate failure detection for each of the phases may be employed"), Fig. 4 (depicting a two-phase regulator with two failure detection circuits).

Each of Buxton's failure circuits includes a decision circuit, which senses whether the regulator is operating normally by determining whether a sensed parameter (e.g., current or voltage) transitions from on to off during every clock cycle and toggles a signal from a first to a second state every clock cycle. Buxton 3:3–19. The decision circuit's output is connected to a respective counter's reset input, and, if the output does not toggle, the counter increments its internal count once per clock cycle. Buxton 3:20–26. If the counter reaches a predetermined value, the counter toggles its output, which indicates a failure. Buxton 3:26–28, 3:43–45; *see* Buxton 6:24–33.

As mentioned above, in order to identify the phase in which the failure occurs, Buxton a counter for each phase. Buxton 7:12–22; *see* Buxton 6:63–7:1. Accordingly, even in embodiments that identify the phase in which a failure occurred, the phase failure signals (i.e., PHASE1FAIL and PHASE2FAIL) merely teach or suggest toggling the PHASE1FAIL signal to an "on" value when the circuit detects a failure in the first phase and toggling the PHASE2FAIL signal to an "on" value when the circuit detects a failure in the second phase. Buxton 7:23–35.

Thus, it is true that Buxton teaches counting a number of pulses and, when that count exceeds a predetermined number, outputting a failure signal indicating the phase to which the counter is connected failed. However,

Buxton merely teaches failure signals that toggle when the circuit determines the respective phase failed. Buxton does not explicitly indicate the counter output values that indicate a circuit failure but merely describes the output as being toggled from one value to another. Notably, although Buxton does not explicitly disclose "on" and "off" values for either the PHASE1FAIL signal or the PHASE2FAIL signal, Buxton at least suggests that the two signals toggle between the *same* "on" and "off" values. Accordingly, we agree with Appellant that Buxton's failure signals fail to teach or suggest signals having "a number of pulses that varies according to the phase in which the failure has occurred," as recited in claim 13. Claim 14 depends from claim 13 and incorporates the limitations of claim 13. Thus, we reverse the Examiner's rejection of claims 13 and 14 as obvious in view of Kumagai, Kajima, Hu, Grek, and Buxton.

REJECTION OF CLAIM 15

Dependent claim 15 additionally recites "a first pulse having a width that varies according to the type of failure that has occurred, and . . . a second pulse having a width that varies according to the phase in which the failure has occurred." Appeal Br. 19. The Examiner finds Grek's disclosure of a pulse width indicating an alarm type teaches or suggests the recited first pulse and Isaka's disclosure of a pulse width indicating a failure's phase teaches or suggests the recited second pulse. Final Act. 15–16.

Appellant argues the Examiner fails to consider the claim as a whole because neither Grek nor Isaka teach that their disclosed signals are part of an alarm signal. Appeal Br. 15. The Examiner notes that nonobviousness cannot be established by attacking references individually when the rejection is based on a combination of references. Ans. 6–7 (citing *Keller*, 642 F.2d

413; *Merck*, 800 F.2d 1091). The Examiner finds the combination of Kumagai, Kajima, and Hu teaches or suggests conveying both a failure type and the phase in which the failure occurred in a single alarm signal, and the Examiner finds Grek and Isaka teach the particular way the type and phase are embedded or encoded within their respective portions of the signal. *See* Ans. 6–7.

As the Examiner noted, the Examiner merely relies on Grek and Isaka to teach or suggest particular methods for encoding data. *See* Final Act. 15–16. In particular, the Examiner finds Grek teaches using a pulse width to convey failure type and Isaka teaches using a pulse width to convey the phase in which the failure occurred. Final Act. 15–16. Accordingly, Appellant's argument that Grek and Isaka do not teach their signals are part of an alarm signal does not address the Examiner's findings. Thus, we agree with the Examiner that Appellant's attack on the individual teachings of Grek and Isaka demonstrates an error in the rejection because the Examiner finds a combination of Kumagai, Kajima, Hu, Grek, and Isaka teaches or suggests the disputed limitations.

REJECTIONS OF CLAIMS 4, 5, 8–12, 14, AND 16

Appellant does not argue dependent claims 4, 5, 8–12, 14, and 16 separately with particularity. Therefore, we sustain the Examiner's rejection of these claims as obvious over Kumagai, Kajima, and Hu in further view of one or more of Buxton, Okumura, Isaka, and Grek for the same reasons.

NEW GROUND OF REJECTION OF CLAIMS 13 AND 15

We enter a new ground of rejection pursuant to our authority under 37 C.F.R. § 41.50(b). In particular, we newly reject dependent claim 13 and

15 under 35 U.S.C. § 103 as obvious in view of Kumagai, Kajima, Hu, and Okumura.

Okumura generally relates to "a method of detecting abnormal conditions in an inverter device." Okumura 1:11–18. Okumura notes problems with conventional elements for detecting failures—namely, "that the particular abnormal condition cannot be identified from the abnormality signal thus outputted." Okumura 3:10–12. Okumura addresses this problem by providing different abnormality signals "as outputs according to the three respective abnormal conditions." Okumura 3:17–22. In particular, Okumura teaches outputting a pulse having a width that varies according to the type of abnormality signal (e.g., overcurrent, control supply voltage reduction, and overheat). Okumura 9:23–30. Okumura also discloses that pulse width is merely one exemplary method for distinguishing the failure type, but the system may alternatively use "any signals which are distinguished from one another," such as "different amplitudes, *frequencies*, or the like." Okumura 9:30–35 (emphasis added).

As discussed above, we agree with the Examiner that, in combination, Kumagai, Kajima, and Hu teach or suggest the subject matter recited in claim 2, from which claims 13 and 15 depend. In particular, Kumagai already teaches or suggests an alarm signal that indicates both the failure type and the phase in which the failure occurred. Kumagai ¶¶ 2, 9, 56. We find this disclosure in Okumura—various encoding methods (pulse width, amplitude, and *frequency*) may be used to identify the type of failure—teaches or suggests the general concept of encoding a signal to convey one value out of a set of choices.

Notably, "the question under 35 USC § 103 is not merely what the references expressly teach but what they would have *suggested* to one of ordinary skill in the art at the time the invention was made." *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (emphasis added) (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)); *see also* MPEP § 2123. Given Okumura's disclosure of known methods to encode the three failure types using a pulse width or frequency, the combination of Kumagai, Kajima, and Hu, as modified by Okumura teaches or suggests an alarm signal in which (1) the failure type is encoded using a pulse width, as taught by Okumura and (2) the phase in which the failure occurred is encoded using either a pulse width or a frequency, as suggested by Okumura. Applying Okumura's teachings to the Kumagai-Kajima-Hu system and method merely requires applying Okumura's known technique of encoding one of a set of values to a known system that yields no more than predictable results. *See KSR*, 550 U.S. at 417.

For the reasons discussed above, we conclude dependent claims 13 and 15 are obvious under 35 U.S.C. § 103 in view of the teachings and suggestions of Kumagai, Kajima, Hu, and Okumura. The Patent Trial and Appeal Board is a review body rather than a place of initial examination. We have made a new rejection regarding dependent claims 13 and 15 under 35 U.S.C. § 103, pursuant to 37 C.F.R. § 41.50(b). However, we have not reviewed the remaining claims to the extent necessary to determine whether these claims are unpatentable over this combination or any other combination not before us. We leave it to the Examiner to ascertain the appropriateness of any further rejections based on these or other references. Our decision not to enter a new ground of rejection for all claims (i.e., claim

14), however, should not be considered as an indication regarding the appropriateness of further rejection or allowance of the non-rejected claims. *See* MPEP § 1213.02.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed	New Ground
1, 2, 6	103	Kumagai, Kajima, Hu	1, 2, 6		
3, 7	103	Kumagai, Kajima, Hu, Okumura	3, 7		
4, 8	103	Kumagai, Kajima, Hu, Buxton	4, 8		
9	103	Kumagai, Kajima, Hu, Okumura, Buxton	9		
5, 10	103	Kumagai, Kajima, Hu, Isaka	5, 10		
11	103	Kumagai, Kajima, Hu, Okumura, Isaka	11		
12	103	Kumagai, Kajima, Hu, Buxton, Isaka	12		
13, 14	103	Kumagai, Kajima, Hu, Grek, Buxton		13, 14	
15, 16	103	Kumagai, Kajima, Hu, Grek, Isaka	15, 16		
13, 15	103	Kumagai, Kajima, Hu, Okumura			13, 15
Overall Outcome			1–12, 15, 16	13, 14	13, 15

TIME PERIOD FOR RESPONSE

Section 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Section 41.50(b) also provides that Appellant, WITHIN TWO MONTHS FROM

THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner.
>
> (2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same Record.

Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED IN PART; 37 C.F.R. § 41.50(b)