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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* STAN ZYWICKI, CARY LEEN, and ERIC BARTON

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Appeal 2015-006949  
Application 13/325,515  
Technology Center 2100

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Before JUSTIN BUSCH, DAVID C. McKONE, and KAMRAN JIVANI,  
*Administrative Patent Judges.*

McKONE, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1–15 and 17–20, which constitute all the claims pending in this application. Claim 16 is cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

THE INVENTION

The invention relates to heating, ventilation, and/or air conditioning (“HVAC”) controllers for controlling HVAC systems. Spec. 1:4–5. An HVAC controller may store a delta T limit, including a maximum and/or a

minimum delta T limit. *Id.* at 1:18–19. A delta T is a difference or change in temperature between a return air side and a discharge air side of an HVAC system for the heating and/or cooling mode. *Id.* at 5:11–17.

According to the Specification,

[t]he HVAC controller may compare a measured delta T value against a delta T limit to determine if the delta T limit has been violated. If the HVAC controller determines that a delta T limit has been violated, the HVAC [c]ontroller may log the violation, and in some cases, display a user alert on a display of the HVAC controller.

*Id.* at 1:19–23.

Claim 1, which is illustrative of the invention, reads as follows:

1. An HVAC controller configured to control one or more components of an HVAC system, the HVAC controller comprising:

a housing;

a user interface including a display;

a memory;

an I/O block for receiving one or more signals from the HVAC system and for providing one or more control signals to the HVAC system;

a controller coupled to the memory, the user interface and the I/O block, wherein the user interface including the display, the memory, the I/O block and the controller are housed by the housing, the controller programmed to accept a delta T limit via the user interface of the HVAC controller; and

the controller further configured to monitor one or more signals received via the I/O block to determine if the delta T limit has been violated, indicating a delta T fault, and to display on the display of the HVAC controller a user alert for at least some detected delta T faults.

## THE REFERENCES AND REJECTION

Claims 1–7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Leen (US 2009/0140056 A1, published June 4, 2009), Pouchak (US 2007/0114291 A1, published May 24, 2007) and Hoog (US 6,385,510 B1, issued May 7, 2002). Final Act. 3–8.

Claims 8–15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Leen, Pouchak, Hoog, and Barbier (US 6,578,373 B1, issued June 17, 2003). *Id.* at 8–15.

Claims 17–19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Leen and Hoog. *Id.* at 15–17.

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Leen, Hoog, and Pouchak. *Id.* at 17–19.

## ANALYSIS

### SCOPE AND CONTENT OF THE PRIOR ART

Leen describes an HVAC controller (e.g., a thermostat), including a memory block, an input/output (“I/O”) block, a user interface with a display, and a controller coupled to the memory block, the I/O block, and the user interface, all housed within a housing. Leen ¶¶ 25–30, Figs. 1, 2.

Pouchak describes interfacing a personal digital assistant (“PDA”) with an HVAC controller (e.g., a programmable thermostat). Pouchak ¶¶ 8–9, 14–16. The PDA can be used for automatic testing, checkout, analysis, and diagnosis of the HVAC system. *Id.* ¶ 15. For example, the PDA can display a configuration tool for connecting to, modifying the configuration of, and calibrating the programmable thermostat. *Id.* ¶¶ 87–90. The configuration tool can collect data, including the entry and discharge air

temperatures over a time interval and the cooling coil delta temperature that is the difference between the coil entering and discharge air temperatures. *Id.* ¶ 223. The PDA can be used to test sensors and display noted failures, errors, and dysfunctions. *Id.* ¶ 225.

Hoog describes a remote monitoring device for monitoring the performance of residential and light commercial HVAC systems. Hoog, 1:11–16. In its description of related art, Hoog explains that performance monitors are designed to use sensors to measure a delta T. *Id.* at 1:52–57. A contractor enters high and low heat delta T limits and high and low cool delta T limits into such a monitor. *Id.* at 1:61–63. When the HVAC system exceeds any of these delta T limits, an alarm (such as a flashing light or sounding buzzer) is sounded, or a message is sent via modem and telephone to the contractor. *Id.* at 1:63–67, 8:54–9:9, Fig. 2b.

#### REJECTION OF CLAIMS 1–7 UNDER 35 U.S.C. § 103(a)

Regarding claim 1, the Examiner finds that Leen teaches a housing, a user interface including a display, a memory, an I/O block, and a controller coupled to the user interface, memory, and I/O block. Final Act. 3. The Examiner further finds that Pouchak teaches a controller configured to monitor one or more signals received via an I/O block to determine if a delta T limit has been violated and to display a user alert for a detected fault (although not necessarily a delta T fault). *Id.* at 4. The Examiner also finds that Hoog teaches a controller programmed to accept a delta T limit via a user interface and to indicate a delta T fault. *Id.* at 4–5.

The Examiner finds that a skilled artisan would have combined the teachings of Leen, Pouchak, and Hoog such that Leen's HVAC controller

would have incorporated Pouchak's technique of determining that a delta T limit has been violated and Leen's user interface would have incorporated Hoog's teaching of accepting a delta T time limit at a user interface. *Id.* at 3–5. In this combination, Pouchak's user alert for a detected fault would, per Hoog's teachings, include an indication of a delta T fault, and, per Leen's teaching, would display on Leen's user interface. *Id.*

The Examiner finds reasons to combine stated in Pouchak and Hoog. *Id.* at 4 (citing Pouchak ¶ 15 (“A PDA and its interfacing with the thermostat of an air management system may also be used for automatic testing, checkout, analysis and diagnosis of the system.”)), 5 (citing Hoog, 3:29–31 (“It is therefore an object of the present invention to provide an efficient means and method for determining ideal operating performance levels of an HVAC unit.”)).

Appellants contend that a skilled artisan would not have been motivated to combine Pouchak with Leen because Pouchak initiates any diagnostic testing of an HVAC system, including delta T testing, via a PDA that is separate and distinct from a thermostat and that must be manually connected to the thermostat. App. Br. 8–9. According to Appellants,

Pouchak itself does not consider the configuration tool 12 to be part of the user interface of the HVAC controller (thermostat 11). It is the thermostat 11 in Pouchak, not the configuration tool 12, that is the HVAC controller, and more particularly, the HVAC controller that is configured to “control one or more components of the HVAC system”, as is recited in claim 1.

*Id.* at 9; see also Reply Br. 2 (“Appellants[] respectfully assert that in view of Pouchak, one would be motivated to use a separate device for the diagnostic features taught by Pouchak.”). Similarly, Appellants argue that “Pouchak does not disclose displaying the errors, failures and/or

dysfunctions on the display of the thermostat itself. Nor does Pouchak disclose that the errors, failures and dysfunctions include a delta T fault.” App. Br. 11.

Appellants’ argument is an attack on Pouchak individually without consideration of the combined teachings of Leen, Pouchak, and Hoog, an approach the Federal Circuit has counseled against. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (“Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.”). As the Examiner explains in response, Leen’s HVAC controller includes installer and testing interfaces. Ans. 2. According to the Examiner, a skilled artisan would have incorporated the additional test described in Pouchak with the HVAC controller described in Leen. *Id.* Further, as explained above, Hoog teaches an alert for a delta T fault.

Appellants essentially argue that the cited references cannot be physically combined. The issue, however, is not whether Pouchak’s PDA would have been incorporated into Leen’s system, but rather how the teachings of those references would have been combined. *See In re Mouttet*, 686 F.3d 1322, 1332–33 (Fed. Cir. 2012) (“It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements. . . . Rather, the test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art.”). We agree with the Examiner that a skilled artisan would have incorporated Pouchak’s teachings of determining that a delta T limit has been violated and displaying a user alert for a detected fault with Leen’s teaching of an HVAC

controller with a user interface and display and further with Hoog's teaching of displaying an alert for a delta T fault.

Appellants further argue that Pouchak teaches away from the Examiner's proposed combination. App. Br. 9–10. Specifically, Appellants argue that Pouchak describes advantages of using a PDA to interface with an HVAC controller, advantages that allegedly would be lost in a combination with Leen. *Id.*; Reply Br. 2–3. According to Appellants, “[b]y stating that substantial benefits are achieved by ‘removing the thermostat configuration installer interface from the thermostat operator interface to a PDA’, a person of ordinary skill, upon reading the entirety of Pouchak, would clearly be led in a direction divergent from the path that was taken by the applicant.” App. Br. 10. We agree with the Examiner (Ans. 3), however, that disclosing some examples as preferred does not necessarily teach away from non-preferred examples. *See Mouttet*, 686 F.3d at 1331 (“A reference may be read for all that it teaches, including uses beyond its primary purpose.”), 1334 (“This court has further explained that just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.”). Rather, “[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Appellants have not shown persuasively that a skilled artisan would have been discouraged or led in a direction divergent from their invention.

Appellants raise similar arguments as to Hoog. Specifically, Appellants argue that “Hoog relates to a performance monitor that is

connected to a thermostat, and like the PDA of Pouchak, the performance monitor of Hoog appears to be a separate device from the thermostat” and that “Hoog cannot be seen to disclose a controller of an HVAC controller (housed in the same housing as the user interface including the display, the memory and the I/O block of the HVAC controller) that is programmed to accept a delta T limit via the user interface of the HVAC controller as recited in claim 1.” App. Br. 11. Once again, Appellants improperly attack Hoog individually without accounting for the teachings of Leen and Pouchak. *See Merck*, 800 F.2d at 1097.

Appellants argue that modifying an HVAC controller with the capabilities of a central station “would require further programming and manipulation of the controller, plus likely additional hardware and expense, beyond what is fairly taught by any of Leen, Pouchak, or Hoog.” Reply Br. 4. We do not understand the Examiner’s finding to be that all of the capabilities of a central station would have been incorporated into Leen’s HVAC controller. Rather, the Examiner finds that an alert corresponding to one particular test, an alert for a delta T test as taught in Hoog, would have been incorporated into a system of Leen and Pouchak. Final Rej. 4–5. In any case, Appellants do not cite evidence for their contention. Therefore, it is unpersuasive.

Thus, Appellants have not shown that the Examiner erred in rejecting claim 1. Claims 2–7 depend from claim 1. Appellants do not argue claims 2–7 separately. App. Br. 12. Appellants have not shown that the Examiner erred in rejecting claims 2–7.

REJECTION OF CLAIMS 8–15 UNDER 35 U.S.C. § 103(a)

Claim 8 depends from claim 1 and adds “wherein the controller is further programmed to display a user alert on the display only after a pre-determined number of delta T faults are detected by the controller.” Claim 9 is substantively similar to claim 1, but, similar to claim 8, recites that the controller is programmed to display a user alert on the display “only after a pre-determined number of delta T faults are detected by the controller, wherein the pre-determined number is greater than one.” The Examiner makes similar findings for the aspects of claim 9 that overlap with claim 1. Final Act. 9–11. The Examiner cites Barbier for the additional aspect of claims 8 and 9. *Id.* at 9, 12.

Barbier describes a floodback detector for a refrigerant system that employs, *inter alia*, temperature rate of change. Barbier, Abstract. The Examiner finds that Barbier teaches triggering an alert only after a pre-determined number of faults greater than one are detected by the controller. Final Act. 9, 12. The Examiner further finds that a skilled artisan would have incorporated Barbier’s teachings in order to minimize nuisance alarms. *Id.*

As to claims 8 and 9, Appellants essentially incorporate or repeat their arguments for claim 1. App. Br. 13–16. As to Barbier, Appellants argue that “absent Applicants’ own disclosure, there would appear to be no motivation or other reason to combine Barbier with Leen, Pouchak, and Hoog.” *Id.* at 16. Appellants, however, do not address the Examiner’s stated reason to combine or explain why it is incorrect. We find that the Examiner’s reason to combine Barbier with the other cited references has

some rational underpinning. Accordingly, Appellants have not shown that the Examiner erred in rejecting claims 8 and 9.

Claims 10–15 depend from claim 9. Appellants do not argue claims 10–15 separately. App. Br. 16. Appellants have not shown that the Examiner erred in rejecting claims 10–15.

#### REJECTION OF CLAIMS 17–19 UNDER 35 U.S.C. § 103(a)

Regarding claim 17, similar to claim 1, the Examiner finds that Leen teaches an HVAC controller including a user interface with a display, a memory, and a controller, all housed by a housing. Final Act. 16. The Examiner further finds that Leen teaches applying a parameter to each of two or more equipment stage combinations that support a selected HVAC operational mode, albeit the parameter is not a delta T limit. *Id.* The Examiner finds that Hoog teaches accepting one or more delta T limits for a selected HVAC operational mode of the HVAC system entered by a user and that this delta T limit would have been the parameter applied to the two or more equipment stage combinations of Leen. *Id.*

As they do for claim 1, Appellants argue that Hoog is not combinable with Leen because Hoog describes a performance monitor that is a device separate from a thermostat. App. Br. 17. For the reasons given for claim 1, this argument is not persuasive.

Appellants further argue that Hoog is silent as to “applying a delta T limit of the one or more delta T limits to each of two or more equipment stage combinations that support the selected HVAC operational mode,” as recited in claim 17 (emphasis Appellants’). *Id.* According to Appellants, the Examiner is advancing an unsupported inherency theory. *Id.* at 17–18.

As the Examiner reiterates in the Answer, though, the Examiner finds that Leen teaches applying a parameter to each of two or more equipment stage combinations. Ans. 5 (citing Leen, Figs. 132, 133). The Examiner finds that Hoog teaches a delta T time limit for an operational mode and that a skilled artisan would have applied Hoog's teaching of a delta T time limit to Leen's teaching of applying a parameter to each of two or more equipment stage combinations. *Id.* Appellants' argument once again attacks a reference (Hoog) individually without accounting for the Examiner's proposed combination. This approach is again unpersuasive. *See Merck*, 800 F.2d at 1097. Accordingly, Appellants have not shown that the Examiner erred in rejecting claim 17.

Claims 18 and 19 depend from claim 17. Appellants do not argue claims 18 and 19 separately. App. Br. 18–19. Appellants have not shown that the Examiner erred in rejecting claims 18 and 19.

#### REJECTION OF CLAIM 20 UNDER 35 U.S.C. § 103(a)

Claim 20 depends from claim 17. The Examiner cites Pouchak for the additional limitation of claim 20 and finds that a skilled artisan would have combined Pouchak with Leen and Hoog for reasons similar to those given for claim 1. Final Act. 17–18. Appellants argue that Pouchak teaches away from this combination, presumably referencing its arguments for claim 1. App. Br. 19. For the reasons given above, these arguments are not persuasive. Appellants have not shown that the Examiner erred in rejecting claim 20.

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DECISION

The Examiner's decision to reject claims 1–15 and 17–20 is affirmed.

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

AFFIRMED