

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ECOBEE TECHNOLOGIES ULC,
Petitioner,

v.

ECOFACITOR, INC.,
Patent Owner.

IPR2022-00969
Patent 8,596,550 B2

Before SCOTT B. HOWARD, PAUL J. KORNICZKY, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

KORNICZKY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

ecobee Technologies ULC (“Petitioner”) filed a Petition for *inter partes* review of claims 17–23 of U.S. Patent No. 8,596,550 B2 (Ex. 1001, “the ’550 patent”). Paper 2 (“Pet.”). EcoFactor, Inc. (“Patent Owner”) filed a Preliminary Response opposing institution. Paper 7 (“Prelim. Resp.”).

Under 35 U.S.C. §§ 6(b)(4), 314 and 37 C.F.R. § 42.4(a), we have authority to institute an *inter partes* review if “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). After considering the Petition, Preliminary Response, and evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood of showing the unpatentability of at least one of the challenged claims. Thus, we grant Petitioner’s request to institute an *inter partes* review of claims 17–23 of the ’550 patent.

II. BACKGROUND

A. *Real Parties-in-Interest*

As required by 37 C.F.R. § 42.8(b)(1), each party identifies the real party-in-interest. Petitioner identifies ecobee Technologies ULC, ecobee Ltd., and Generac Holdings Inc. as the real parties-in-interest. Pet. 76. Patent Owner identifies itself as a real party-in-interest. Paper 5, 1.

B. *Related Proceedings*

As required by 37 C.F.R. § 42.8(b)(2), Petitioner and Patent Owner identify the judicial or administrative matters that would affect or be affected

by a decision in this proceeding. Petitioner and Patent Owner state the '550 patent is the subject matter of:

- (1) *Emerson Electric Co. v. EcoFactor, Inc.*, 1-21-cv-00317 (D. Del. March 1, 2021);
- (2) *Google, LLC f/k/a Google Inc. v. EcoFactor, Inc.*, 3-21-cv-01468 (N.D. Cal. March 1, 2021);
- (3) *ecobee, Inc. v. EcoFactor, Inc.*, 1-21-cv-00323 (D. Del. March 2, 2021);
- (4) *Carrier Global Corp. v. EcoFactor, Inc.*, 1-21-cv-00328 (D. Del. March 3, 2021);
- (5) *EcoFactor, Inc. v. Google, LLC*, 6-22-cv-00350 (W.D. Tex. April 1, 2022);
- (6) *Certain Smart Thermostat Systems, Smart HVAC Systems, Smart HVAC Control Systems, And Components Thereof*, Inv. No. 337-TA-1258 (April 4, 2022) (Initial Determination) (“*Certain Smart Thermostat Systems*”); and
- (7) *ecobee Technologies ULC v. EcoFactor, Inc.*, IPR2022-00983. Pet. 76–77; Paper 5, 1.

C. *Overview of the '550 Patent (Ex. 1001)*

The '550 patent is titled “System, Method and Apparatus for Identifying Manual Inputs to and Adaptive Programming of a Thermostat.” Ex. 1001, code (54). The '550 patent describes a system and methods for controlling climate control systems such as heating, ventilation, and air conditioning (HVAC) systems. *Id.* at code (57).

According to the '550 patent, programmable thermostats, which control HVAC systems, offer two types of advantages over non-programmable devices. Ex. 1001, 1:18–20. First, “programmable thermostats can save energy . . . because they automate the process of reducing conditioning during times when the space is unoccupied, or while occupants are sleeping, and thus reduce energy consumption.” *Id.* at 1:21–25. Second, “programmable thermostats can also enhance comfort” and “allows homeowners to anticipate [a] desired result by programming a pre-conditioning of the home.” *Id.* at 1:26–38. For example, “if the homeowner gets out of bed at 7 AM, setting the thermostat to change from the overnight setpoint of 64 degrees to 70 at 6 AM can make the house comfortable when the consumer gets up.” *Id.* at 1:38–41.

The '550 patent, however, states “all of the advantages of a programmable thermostat depend on the match between the preferences of the occupant and the actual settings employed.” Ex. 1001, 1:45–47. “If the temperatures programmed into a thermostat do not accurately reflect the preferences of the occupants, those occupants are likely to resort to manual overrides of the programmed settings.” *Id.* at 1:64–67. “The need to correct the ‘mistakes’ of the thermostat is likely to annoy many users” and, “because people tend to overshoot the desired temperature when they make such manual changes, these overrides are likely to result in excessive heating and cooling, and thus unnecessary energy use.” *Id.* at 1:67–2:5. “That is, if a person feels uncomfortable on a summer afternoon when the setting is 73 degrees, they are likely to change it to 68 or 69 rather than 71 or 72 degrees, even if 72 degrees might have made enough of a difference.” *Id.* at 2:5–8.

Thus, the '550 patent explains that it would be desirable to have a system and method which may adapt to the occupants' manual temperature changes and incorporate the information contained in such gestures into long-term programming and which accounts for both outside weather conditions and the thermal characteristics of individual homes in order to improve the ability to dynamically achieve the best possible balance between comfort and energy savings. Ex. 1001, 2:9–17. To achieve these goals, the '550 patent discloses systems and methods for incorporating manual changes to the setpoint for a thermostatic controller into long-term programming of the thermostatic controller. *Id.* at code (57). It discloses servers 106 which log the temperature readings from inside each house and the timing and duration of air conditioning cycles, and databases 300 which contain a history of the thermal performance of each house. *Id.* at 5:21–25. According to the '550 patent, this performance data allows “server 106 to calculate an effective thermal mass for each such structure — that is, the speed with the temperature inside a given building will change in response to changes in outside temperatures.” *Id.* at 5:22–29. Because the server will also log these inputs against other inputs including time of day, humidity, etc., the '550 patent explains that “the server will be able to predict, at any given time on any given day, the rate at which inside temperature should change for given inside and outside temperatures.” *Id.* at 5:30–34.

According to the '550 patent, this performance data also permits server 106 to calculate and automate setpoints and schedule future set point changes to reduce energy consumption, etc. Ex. 1001, 5:54–6:3; *see also*, e.g., *id.* at 5:63–6:1 (stating “for time0 the setpoint as scheduled by server 106 according to the standard setpoint programming (S0), and for time0 the

setpoint as scheduled by server 106 according to the standard setpoint programming (S-1). In step 1004, the server retrieves any additional automated setpoint changes C that have been scheduled for the thermostat by server 106.”).

The ’550 patent explains that its system compares “the actual setpoint at a given time for the thermostatic controller to an expected setpoint for the thermostatic controller in light of the scheduled programming” and “a determination is then made as to whether the actual setpoint and the expected setpoint are the same or different.” Ex. 1001, code (57). “Furthermore, a manual change to the actual setpoint for the thermostatic controller is compared to previously recorded setpoint data for the thermostatic controller.” *Id.* “At least one rule is then applied for the interpretation of the manual change in light of the previously recorded setpoint data.” *Id.*

D. Illustrative Claim

As mentioned above, Petitioner challenges claims 17–23 of the ’550 patent. Claim 17, the only independent claim, is reproduced below.¹ Ex. 1001, 9:26–10:17.

[17a] An apparatus for detecting manual changes to the set point for a thermostatic controller comprising:

[17b] at least a programmable communicating thermostat;

[17c] at least a remote processor;

¹ For ease of reference, we use Petitioner’s claim numbering scheme, added in brackets. *See* Pet. 21–43.

[17d] at least a network connecting said remote processor and said communicating [thermostat]²;

[17e] at least a database comprising a plurality of internal temperature measurements taken within a structure and a plurality of outside temperature measurements relating to temperatures outside the structure;

[17f] computer hardware comprising one or more computer processors configured to use the stored data to predict a rate of change of temperatures inside the structure in response to changes in outside temperatures;

[17g] the one or more computer processors configured to calculate scheduled setpoint programming of the programmable communicating thermostat for one or more times based on the predicted rate of change, the scheduled programming comprising one or more automated setpoints;

[17h] at least a database that stores the one or more automated setpoints associated with the scheduled programming for said programmable communicating thermostat;

[17i] at least a database that stores actual setpoint programming of said programmable communicating thermostat; and

[17j] the one or more computer processors configured to compare the one or more automated setpoints associated with said scheduled setpoint programming with said actual setpoint programming.

² Petitioner interprets “said communicating” to be the communicating thermostat. Pet 26, n.3. Patent Owner does not contest Petitioner’s position. *See* Prelim. Resp.

E. Evidence and Asserted Grounds

Petitioner relies upon the following evidence:

(1) U.S. Patent Publication 2004/0117330, published June 17, 2004 (Ex. 1004, “Ehlers”);

(2) U.S. Patent Publication 2005/0040250, published February 24, 2005 (Ex. 1005, “Wruck”);

(3) U.S. Patent 8,374,725 B1 (Ex. 1006, “Ols”);

(4) U.K. Patent Application GB 2432016 A (Ex. 1007, “Boait”).

Petitioner submits a declaration from David M. Auslander (Ex. 1002).

Patent Owner does not submit a declaration at this time.

Petitioner challenges the patentability of claims 17–23 of the ’550 patent claims on the following grounds (Pet. 10–11):

Ground	Claim(s) Challenged	35 U.S.C. § ³	Reference(s)/Basis
1	17–23	103(a)	Ehlers, Wruck
2	17–23	103(a)	Ols, Boait, Wruck

We briefly summarize the prior art references below.

1. Overview of Ehlers (Ex. 1004)

Ehlers is a U.S. patent application titled “System and Method for Controlling Usage of a Commodity.” Ex. 1004, code (54). Ehlers describes a system and method for managing delivery of energy from a distribution network to a building or other site. *Id.* at code (57). Ehlers’s system collects

³ The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (Sept. 16, 2011), took effect on March 16, 2013. Because the ’550 patent claims priority to an application filed before this date, our citations to 35 U.S.C. § 103 in this Decision are to its pre-AIA version. Our decision is not impacted, however, by which version of the statute applies.

and stores information relevant to the temperature and other HVAC conditioning of a building. *Id.* ¶ 88.

Ehlers's thermostat contains various scheduled temperature setpoints for the HVAC system, which are manually changeable by a user. Ex. 1004 ¶¶ 12, 116, 153–160. A user can also “override” a scheduled setpoint. *Id.* ¶¶ 116, 156, Fig. 4C.

Ehlers's system tracks and learns the thermal gain characteristics of the home. In order to predict how long it will take for the HVAC system to heat or cool the building from one setpoint to another, it uses the rate of change in temperatures by calculating the rate at which inside temperature changes at any given outside temperature (“thermal gain rate”) for a given setpoint. Ex. 1004 ¶¶ 253–254, 256, 295, Fig. 3D. Ehlers uses this thermal gain rate to “compute[] the required effective set point offset needed to keep the HVAC cycle run time at [a] specified trigger level.” *Id.* ¶ 256. By utilizing the effect that the thermal gain rate has on HVAC run time, Ehlers's system determines what future setpoint would minimize run time. *Id.*

Ehlers also teaches detecting and implementing a user's manual changes to a setpoint. Ex. 1004 ¶¶ 242 (“the system 3.08 manages comfort for the customer site 1.04 by learning from the user's inputs or adjustments to the system 3.08 to change or modify indoor air temperature”), 243 (controls are “modified as needed based on the user's changes to the set point at the thermostat 1.30D” and a “control algorithm [] learn[s] the user's individual preferences and over time, eliminate[s] the need for the site 1.04 occupant to make any changes”).

2. *Overview of Wruck (Ex. 1005)*

Wruck is a U.S. patent application titled “Transfer of Controller Customizations.” Ex. 1005, code (54). Wruck describes a system that allows a personal digital assistant (PDA) or wireless device to control, configure, set, and adjust programmable thermostats of air management systems. *Id.* at code (57), ¶¶ 2–5. It permits the user to control the set point and temporarily override scheduled setpoints. *See, e.g., id.* ¶¶ 5, 14–15, 104. If the user’s temporary setpoint is entered, and the difference between the temporary setpoint and the scheduled setpoint is not equal to zero, the temporary setpoint is displayed. *Id.* at Table 28, ¶ 110.

3. *Overview of Ols (Ex. 1006)*

Ols is a U.S. patent titled “Climate Control.” Ex. 1006, code (54). Ols describes a climate control/HVAC system using a thermostat. *Id.* at 3:16–34, Fig. 1A. Ols’s thermostats connect to controllers, which connect over networks to a server. *Id.* Ols’s system collects and stores information relevant to conditioning a building, including the indoor temperature (*id.* at 6:30–31), and outdoor temperature (*id.* at 19:1–2). Ols’s thermostat uses various temperature setpoints, which may be scheduled to reflect desired temperatures at different times. *Id.* at 23:1–17, 31:33–36. A user may manually change these setpoints and input a user-desired temperature. *Id.* at 21:5–17 (a “user may input a value representing a new desired temperature,” where “the new desired temperature value (or another new set point) may be saved by a key press to a button”), 31:29–37 (“User desired temperature 1022 is the temperature that was input by the user without any modification.”).

Ols also teaches analyzing historical loads needed to change the temperature and climate of different rooms in order to enable businesses to manage their energy consumption more efficiently. Ex. 1006, 11:53–56. For example, “temperature inputs are analyzed, and the control algorithm learns the appropriate current action to take based on evaluations of what has happened in the past” and “learning from historical data, the adjustment to the parameter may be computed to take into account the slower temperature response as a result of the higher load that is normally in the room.” *Id.* at 12:6–9, 12:27–30. Ols teaches that its setpoint temperature is a “computed value to which the temperature of the room is to be set,” and that this calculated setpoint temperature may be different from the user desired temperature, based on environmental conditions, “in order to conserve energy and/or to better meet other needs of the system or of that location.” *Id.* at 31:29–42.

4. *Overview of Boait (Ex. 1007)*

Boait is a U.K. patent application titled “Electronic Control Units for Central Heating Systems.” Ex. 1007, code (54). Boait describes an “automatic electronic control unit for controlling the operation of a central heating system where the time settings are determined automatically from a detection of the user's activity and lifestyle habits.” *Id.* at code (57). Boait’s system includes “a manual temperature setting device that can be manually activated by an operator to modify at least one of the first and second temperature profiles.” *Id.* at 6. Boait further discloses “[t]he specific thermal capacity of the house Q (Joules/°C) and the specific heating load L (Watts/°C of temperature difference between the inside and outside of the

house) are calculated by the electronic control unit from the gradient of the fall in temperature overnight, and the rise in temperature when the central heating boiler is supplying heat” *Id.* at 20.

III. ANALYSIS

A. *Legal Standards*

Petitioner bears the burden of persuasion to prove unpatentability, by a preponderance of the evidence, of the claims challenged in the Petition. 35 U.S.C. § 316(e). This burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

As mentioned above, Petitioner’s challenge is based on obviousness. Pet. 10–11. A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in the record, objective evidence of nonobviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

⁴ At this stage of the proceeding, Patent Owner has not directed us to any objective evidence of non-obviousness. *See* Prelim. Resp.

B. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *Id.*

Petitioner states a person of ordinary skill in the art would have had “a (1) Bachelor’s degree in engineering, computer science, or a comparable field of study, and (2) at least five years of (i) professional experience in building energy management and controls, or (ii) relevant industry experience. Additional relevant industry experience may compensate for lack of formal education or vice versa.” Pet. 20 (citing Ex. 1002 ¶¶ 23–25).

Patent Owner does not address Petitioner’s proffered level of skill discussed by Petitioner’s declarant. *See* Prelim. Resp.

We adopt Petitioner’s definition of the level of ordinary skill for the purposes of this Decision.

C. Claim Construction

In an *inter partes* review, the claims are construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2021).

This claim construction standard includes construing the claim in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art. *Id.*; see *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005). In construing claims in accordance with their ordinary and customary meaning, we consider intrinsic evidence such as the specification and the prosecution history of the patent. *Phillips*, 415 F.3d at 1315–17. Extrinsic evidence, including expert and inventor testimony, dictionaries, and treatises, may also be used but is less significant than the intrinsic record. *Id.* at 1315. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* Any special definitions for claim terms must be set forth in the specification with reasonable clarity, deliberateness, and precision. See *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Additionally, only terms that are in controversy need to be construed, and these need be construed only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner states that we should use the claim constructions which “Patent Owner itself agreed to in the ITC investigation captioned *Certain Smart Thermostat Systems*.” Pet. 11 (citing Ex. 1012, 17). The claim constructions are:

'550 Patent Term	Stipulated Construction
“compare”/“comparing”	“analyze/analyzing to determine one or more similarities or differences between”
“rate of change of temperatures inside the structure”	“the difference between inside temperature measurements divided by the span of time between the measurements”
“setpoint”	“a temperature setting for a thermostat to achieve or maintain”
“automated setpoint”	“a computer-calculated temperature setting for a thermostat to achieve or maintain”

Id. As to the term “database” recited in the claims, Petitioner contends that a person of ordinary skill in the art would have understood that a database, in the context of the ’550 patent, is “a collection of data stored on a data structure, where multiple databases can be stored on one data structure” and “the plain and ordinary meaning of database is ‘an organized collection of data.’” *Id.* at 12 (citing Ex. 1002 ¶ 43; Ex. 1018, 165).

Patent Owner does not address Petitioner’s proffered constructions or the meaning of any claim terms. *See* Prelim. Resp.

Based on the present record and for purposes of this Decision, we determine that no construction of the claims is necessary at this stage. *See Nidec*, 868 F.3d at 1017.

D. Ground 1: Asserted Obviousness of Claims 17–23 Over Ehlers and Wruck

Petitioner asserts that claims 17–23 are unpatentable under 35 U.S.C. § 103 as being obvious over Ehlers (Ex. 1004) and Wruck (Ex. 1005). Pet.

21–48. Patent Owner filed a Preliminary Response opposing Petitioner’s challenge. Prelim. Resp. 1–7. As this stage, Patent Owner’s sole argument is that the prior art does not teach or suggest “a computer to compare an *automated setpoint* (i.e., a computer-calculated setpoint) with an *actual setpoint*, which allows the patented system to determine if the setpoints that the computer is calculating are acceptable to the user, or if the user is fighting with or opting-out of the automated programming,” as recited in limitation 17j. *Id.* at 1. Based on the present record, and for the reasons below, we determine Petitioner has shown a reasonable likelihood of prevailing on its obviousness challenge of claims 17–23. Below, we address the parties’ contentions.

1. Claim 17

Petitioner, relying on Mr. Auslander’s testimony, provides a limitation-by-limitation comparison of Ehlers and Wruck to claim 17. Pet. 21–46.

a) Preamble 17a: An apparatus for detecting manual changes to the set point for a thermostatic controller comprising

Petitioner contends that Ehlers teaches this preamble by disclosing a system that involves managing a thermostatic controller, such as the thermostat of a house. Pet. 21 (citing Ex. 1004, code (57), ¶¶ 90, 92, 191, 84, 190, 150, 229, 66, 90, 138, 141, 192, 204, 254, 263, Fig. 2E).

Petitioner also contends that Wruck teaches this preamble by disclosing that “if the user enters a new ‘temporary setpoint,’ it will be displayed on the thermostat if the new user-entered setpoint is different from

the scheduled setpoint.” Pet. 24 (citing Ex. 1005, Table 28, ¶ 110; Ex. 1002 ¶ 79).

Patent Owner does not address Petitioner’s contentions as to the preamble.

b) Limitation 17b: at least a programmable communicating thermostat

Petitioner contends that Ehlers teaches this limitation by disclosing that “Ehlers’s system contains a programmable communicating thermostat in the form of thermostat device 1.30D, which is in communication with gateway node 1.10D via a network” and the “temperature setpoint of Ehlers’s HVAC system is manually changeable to a user’s desired temperature setpoint.” Pet. 24 (citing Ex. 1002 ¶¶ 80, 81; Ex. 1004 ¶¶ 12, 13, 153–160, 228, 239, 244, 253–256, 281, 308, 309, 316–324, 320). Petitioner also explains that a “user can also ‘override’ a scheduled setpoint, which is programmed.” *Id.* (citing Ex. 1004 ¶¶ 116, 118, 156, 316, 354, Fig. 4C; Ex. 1002 ¶ 81).

Petitioner contends that Wruck also teaches this limitation by disclosing a programmable thermostat that communicates with a PDA device. Pet. 25 (citing Ex. 1005 ¶¶ 62–64, Fig. 2; Ex. 1002 ¶ 83).

Patent Owner does not address Petitioner’s contentions as to this limitation.

c) Limitation 17c: at least a remote processor

Petitioner contends that Ehlers teaches this limitation by disclosing a remote processor in the form of a gateway node and that “each node 1.10 in the system 1.02 includes a node processor 2.02 and memory 2.04.” Pet. 25

(citing Ex. 1004 ¶ 268; *see also* Ex. 1004 ¶¶ 244, 253, 295; Ex. 1002 ¶ 84).

Petitioner explains that the “gateway node is (or includes) a computer processor so that it can, among other things, control devices, administer demand reduction programs, and store data.” *Id.* (citing Ex. 1004 ¶¶ 137, 142, 145, 147, 150, 180, 268; Ex. 1002 ¶ 84).

Petitioner contends that Wruck also teaches this limitation by disclosing a PDA or PC which may be utilized to process information regarding, and configure operation of, the programmable thermostat. Pet. 26 (citing Ex. 1005 ¶¶ 62, 63, Fig. 2; Ex. 1002 ¶ 87).

Patent Owner does not address Petitioner’s contentions as to this limitation.

d) Limitation 17d: at least a network connecting said remote processor and said communicating [thermostat]

Petitioner contends that Ehlers teaches this limitation by disclosing that its “remote processor communicates with the programmable communicating thermostat (thermostat 1.30D) via a network RF communication.” Pet. 26 (citing Ex. 1002 ¶¶ 88–89). Figure 1B of Ehlers is reproduced below:

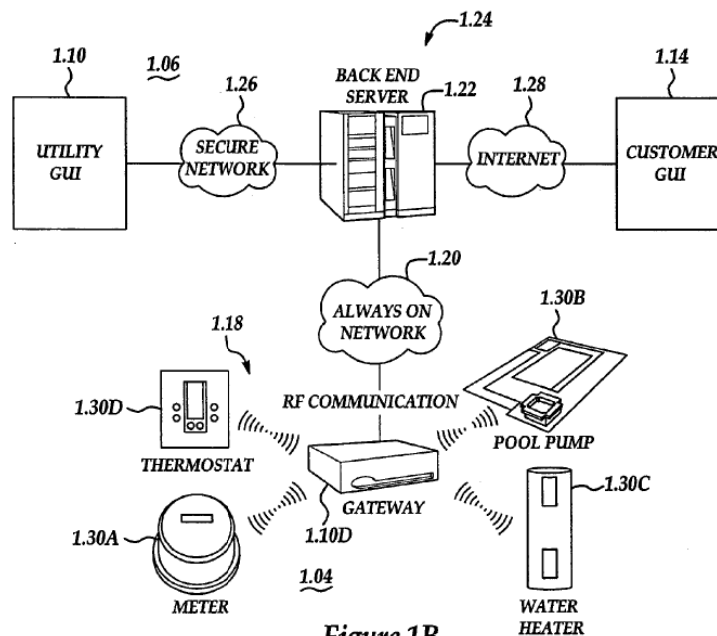


Figure 1B is a diagrammatic illustration of Ehlers's energy management system. Ex. 1004 ¶ 20. Petitioner explains that Ehlers's "thermostat 1.30D connects to gateway 1.10D, which includes a remote processor as set forth under claim limitation [17c]." Pet. 27 (citing Ex. 1004 ¶¶ 61–62; Ex. 1002 ¶ 89). Petitioner further explains that the "gateway node 1.10D communicates with the thermostat 1.30D via a RF communication network." *Id.* (citing Ex. 1004 ¶¶ 61–62, 72–76, 84, 150, 152–153; Ex. 1002 ¶ 89).

Petitioner contends that Wruck also teaches this limitation by disclosing that the thermostat 11 may be connected via a network, and that thermostat information may be transmitted on a network communications bus 84. Pet. 27 (citing Ex. 1005 ¶¶ 135, 144; Ex. 1002 ¶ 90).

Patent Owner does not address Petitioner's contentions as to this limitation.

- e) *Limitation 17e: at least a database comprising a plurality of internal temperature measurements taken within a structure and a plurality of outside temperature measurements relating to temperatures outside the structure*

Petitioner contends that Ehlers teaches this limitation by disclosing that Ehlers's system stores temperature data and "includes 'indoor air temperature sensor 3.10A' which takes internal temperature measurements taken within a structure." Pet. 28 (citing Ex. 1004 ¶ 230; Ex. 1002 ¶ 91). According to Petitioner, Ehlers explains that "various data elements are *stored* within the system 1.02" and "the data may be stored in gateway node 1.10D" or in other nodes in the system. *Id.* (citing Ex. 1004 ¶ 268 ("each node 1.10 . . . includes . . . memory 2.04"); *see also id.* ¶¶ 84, 244, 253, 295; Ex. 1002 ¶ 91). Petitioner further explains that Ehlers's system "measures inside temperature over time and calculates various thermal gain rates which represent how the temperature inside the structure changes in response to a different outdoor temperature, given different initial starting setpoint temperatures. *Id.* (citing Ex. 1002 ¶ 92; Ex. 1004, Fig. 3D (which "depicts actual inside temperature measurement data, which were recorded every 4 minutes"), ¶¶ 253, 256).

Patent Owner does not address Petitioner's contentions as to this limitation.

- f) *Limitation 17f: computer hardware comprising one or more computer processors configured to use the stored data to predict a rate of change of temperatures inside the structure in response to changes in outside temperatures*

Petitioner contends that Ehlers teaches this limitation by disclosing that “Ehlers’s system 3.08 uses the stored data, including outside temperatures, to derive a thermal gain rate, which represents a rate of change in temperature inside the structure (e.g., a home).” Pet. 30 (citing Ex. 1002 ¶ 98; Ex. 1004 ¶ 253, Figs. 3D, 3E). According to Petitioner, this process is depicted in Figure 3D of Ehlers, which is reproduced below.

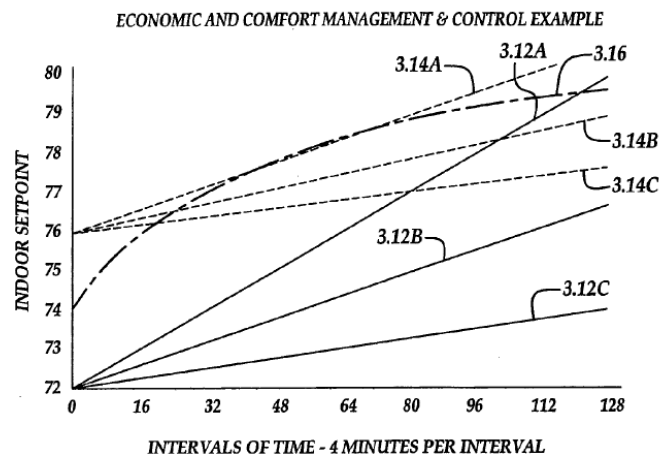


Figure 3D

Figure 3D illustrates a thermal gain table for two set points. Ex. 1004 ¶ 253.

FIG. 3d shows two set points for the home 2.18 that the thermostat 1.30D has recorded. The first set point for which data is available is 72 degrees F. The three trends illustrated as lines 3.12A, 3.12B, and 3.12C plot the thermal rate of gain in the site 1.04 for different outside temperatures. . . . This illustration is used to show the impact the set point versus outside temperature differential has over the thermal gain rate in the home 2.18.

Ex. 1004 ¶ 253; *see also id.* ¶ 254 (“Since the outside temperature varies continuously during a typical day, the rate of thermal gain and the HVAC run times also vary in accordance with these changes.”).

Petitioner explains that the “rate of thermal gain,” or “thermal gain rate,” in Ehlers is “the rate of change in temperature inside the structure (for a given outside temperature), which is depicted by the slope of the lines depicted in Figure 3D (the difference between inside temperature measurements divided by the span of time between the measurements).” Pet. 32 (citing Ex. 1004 ¶¶ 253, 256, Fig. 3E, Fig. 3G (depicting use of “thermal gain rate per hour”); Ex. 1002 ¶ 101)).

Ehlers illustrates the “thermal gain rate” in Figure 3E, which is reproduced below.

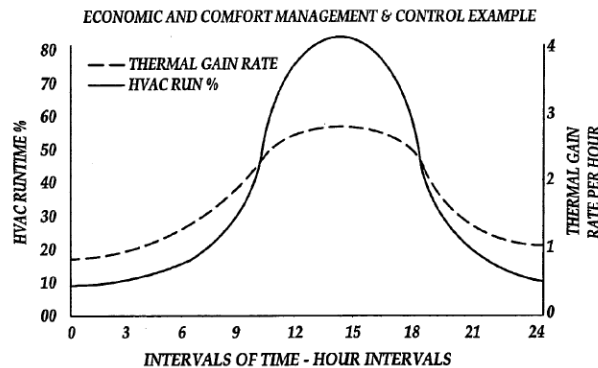


Figure 3E

Figure 3E depicts the thermal gain rate (in degrees F per hour) over the course of one day where “the set point of the system 3.08 was set at a fixed point for the entire day.” Ex. 1004 ¶ 254. According to Petitioner, “[this] illustration depicts that as the outside temperature rises and the differential between the indoor set point and the outside temperature increase, [sic] the thermal gain causes the HVAC system to cycle more frequently.” Pet. 33 (citing Ex. 1004 ¶ 254; Ex. 1002 ¶ 102) (alterations in original). Thus,

Petitioner explains that, despite the fact that the setpoint remains the same during the day, the thermal gain rate (and the inside temperature) changes over the course of the day due to variations in the outside temperature. *Id.* (citing Ex. 1002 ¶ 102). Ehlers also computes and stores a “[c]omputed thermal recovery time for heating and cooling adjusted to compensate for the external temperature” *Id.* (citing Ex. 1004 ¶ 295; Ex. 1002 ¶ 102) (alterations in original).

Petitioner explains that Ehlers measures the temperature inside the structure over time, and calculates various thermal gain rates which represent how the temperatures inside the structure change in response to changes in outside temperatures, given different setpoint temperatures. Pet. 34 (citing Ex. 1002 ¶ 103). According to Petitioner, Ehlers discloses determining “the difference between inside temperature measurements divided by the span of time between the measurements” and these “thermal gain rates are in response to at least changes in outside temperatures because the thermal gain rates are calculated for different outside temperatures and vary with outside temperature.” *Id.* (citing Ex. 1004 ¶¶ 253–254; Ex. 1002 ¶ 103).

Petitioner explains that Ehlers uses this data to predict changes in temperature inside the structure in response to at least changes in outside temperatures in connection with certain energy management functions. Pet. 34 (citing Ex. 1002 ¶ 104). Petitioner presents three examples of this. *See id.* at 34–36. In its first example, Petitioner contends that the thermal gain rate is used to determine a new offset temperature in order to save energy and, in so doing, Ehlers (1) “predicts that the thermal gain rate it computed in the past represents a speed at which temperatures inside the structure will

change in response to changes in outside temperatures at the current time or at a future time” and then (2) “uses this prediction to determine what future setpoint would not increase HVAC run time over a future period of time to ‘compute[] [a] required effective setpoint offset.’” *Id.* at 34–35 (citing Ex. 1004 ¶ 256; Ex. 1002 ¶ 104) (alterations in original).

As a second example, Petitioner contends that Ehlers teaches that the thermal gain rates can be used to predict recovery time which “allows the system to turn on the HVAC system at the appropriate time, and thus achieve the ‘occupied’ temperature setting by the time people are present.” Pet. 35 (citing Ex. 1004 ¶ 246; Ex. 1002 ¶ 105). Petitioner states that, for example, “the system will try to achieve a certain temperature by a certain time (*e.g.*, the user wants the home to be at 70 F by 6 PM).” *Id.* (citing Ex. 1004 ¶ 246). Ehlers teaches storing:

Computed thermal recovery time for heating and cooling
adjusted to compensate for the external temperature This
computed factor is used to more accurately compute the
recovery time for thermal gain or loss when combined with the
average normalized thermal gain or loss for the site 1.04.

Id. (citing Ex. 1004 ¶¶ 268, 295) (alteration in original). Petitioner states “the thermal gain rate is used to predict changes in temperature inside the structure in response to at least changes in outside temperatures to determine when to begin the recovery process.” *Id.* (citing Ex. 1002 ¶ 105).

As a third example, Petitioner states “Ehlers uses thermal gain rates to control inside temperature to balance occupant comfort with energy savings” and the “system can use the ‘thermal gain rate in the site’ to control the ‘ramping rate at which the system 3.08 would permit the temperature to rise within the site 1.04 as it moved from one set point to a higher or lower one to achieve economic benefit.’” Pet. 35–36 (citing Ex. 1004 ¶ 255, Fig. 3F;

Ex. 1002 ¶ 106). According to Petitioner, the system, thus, “predicts that the indoor temperature will rise at a certain rate in view of changes in outside temperatures and controls the behavior of the system accordingly.” *Id.* (citing Ex. 1002 ¶ 106).

Petitioner further explains that a person of ordinary skill in the art would have understood that the stored indoor and outdoor temperature measurements and other stored information was utilized by a computer having one or more processors to performed calculations, for example, the gateway node 1.10D. Pet. 36 (citing Ex. 1004 ¶¶ 84, 171, 179, 182, 268; Ex. 1002 ¶ 108). The gateway node’s processor communicates with the “memory” both in the gateway node as well as within other nodes in the system and also with the thermostat 1.30D, and would facilitate central computer processing for control of all components within the associated structure. *Id.* (citing Ex. 1004 ¶¶ 150, 153–157; Ex. 1002 ¶ 108).

Patent Owner does not address Petitioner’s contentions as to this limitation.

g) *Limitation 17g: the one or more computer processors configured to calculate scheduled setpoint programming of the programmable communicating thermostat for one or more times based on the predicted rate of change, the scheduled programming comprising one or more automated setpoints*

Petitioner contends that Ehlers teaches this limitation by disclosing that Ehlers’s “system 3.08” computes thermal gain rates and then uses those thermal gain rates to perform various computations to manage the system. Pet. 37 (citing Ex. 1004 ¶¶ 252–256). Petitioner explains that, “[i]n doing so, the Ehlers’s system calculates scheduled setpoint programming of the

programmable communicating thermostat for one or more times based on the predicted rate of change, the scheduled programming comprising one or more automated setpoints, or ‘a computer-calculated temperature setting for a thermostat to achieve or maintain.’” *Id.* (citing Ex. 1002 ¶ 109).

Referring to the “first example” discussed above under claim limitation 17f, Petitioner explains that “system 3.08 uses the thermal gain rate to calculate a future setpoint (or automated setpoint) which would not increase HVAC run time. Pet. 37 (citing Ex. 1002 ¶ 110). Petitioner states that Ehlers teaches that “such calculations can be done pursuant to a ‘control program,’ where a calculated setpoint may be ‘offset’ from a target setpoint by a few degrees in order to reduce run time.” *Id.* at 37–38 (citing Ex. 1004 ¶ 256; Ex. 1002 ¶ 110). Petitioner further states that this “is done so that the run time of the system can be minimized, while the new ‘calculated’ setpoint is reasonably close to what was originally targeted” and “[t]his control of the system constitutes scheduled setpoint programming of the thermostat for one or more times based on the predicted rate of change.” *Id.* at 38 (citing Ex. 1004 ¶ 256; Ex. 1002 ¶ 110).

Petitioner contends that it would have been obvious “to configure a gateway node to perform the disclosed calculations because it would be more convenient for an energy company to do so” and a person of ordinary skill in the art would have understood that Ehlers’s “gateway node is a part of ‘system 3.08’ and can be used to perform the claimed calculations.” Pet. 39 (citing Ex. 1004 ¶¶ 268, 246, 253–256; Ex. 1002 ¶¶ 112–113).

Patent Owner does not address Petitioner’s contentions as to this limitation.

- h) Limitation 17h: at least a database that stores the one or more automated setpoints associated with the scheduled programming for said programmable communicating thermostat*

Petitioner contends that Ehlers teaches this limitation because, by disclosing that “various data elements are stored within the system 1.02, [where] the data may be stored in gateway node 1.10D [including] . . . [a] history of temperature set points for the day” (Pet. 39–40 (citing Ex. 1004 ¶¶ 268–309)), a person of ordinary skill in the art would have understood that Ehlers’s scheduled programming data would store the “scheduled” setpoints in the various nodes (*id.* (citing Ex. 1004 ¶¶ 121, 171, 145, 116, 150, 157, 239, 224, 268, 85, 326; Ex. 1002 ¶ 114)). According to Petitioner, it would have been obvious to “store automated setpoints associated with the scheduled programming for the programmable communicating thermostat so that these setpoints can be implemented according to their scheduled times.” *Id.* at 40 (citing Ex. 1002 ¶ 114). Petitioner further contends that a person of ordinary skill in the art would have understood that it would have been obvious to “utilize a ‘database’ to store the automated setpoints, for example in the memory of the gateway node 1.10D” and that “that multiple databases may be located on the same data structure within, for example, gateway node 1.10D, to store setpoint information.” *Id.* (citing Ex. 1004 ¶¶ 150, 153–157, 268; Ex. 1002 ¶ 115).

Patent Owner does not address Petitioner’s contentions as to this limitation.

- i) *Limitation 17i: at least a database that stores actual setpoint programming of said programmable communicating thermostat*

Petitioner contends that Ehlers teaches this limitation by disclosing that Ehlers's system stores, with the programmable communicating thermostat, actual setpoints of the HVAC system. Pet. 40–41 (citing Ex. 1002 ¶ 116). Petitioner explains that Ehlers teaches that “various data elements are stored [including a] . . . history of temperature set points for the day” (*id.* at 41 (Ex. 1004 ¶¶ 268, 278)) and that “[u]sing the user interface 1.14, the customer may view or generate a variety of reports to view historical information about their homes and the devices 1.08 within’ and that such reports ‘include . . . Daily temperature reports displaying temperature and setpoints in, e.g., 15-minute intervals” (*id.* (quoting Ex. 1004 ¶¶ 123–124)) (alterations in original).

According to Petitioner, a person of ordinary skill in the art would have recognized that “tracking patterns in changes to setpoints which are ‘initiated by the occupant’ would involve Ehlers[’s] system storing actual setpoints of the HVAC system” and it would have been obvious “to store actual setpoints of the HVAC system in order to facilitate tracking patterns in changes made to setpoints of the HVAC system which are ‘initiated by the occupant.’” Pet. 41–42 (citing Ex. 1004 ¶¶ 268, 308, 309; Ex. 1002 ¶ 118).

Petitioner also explains that Ehlers teaches and/or suggest that

(1) “the programmable communicating thermostat records the actual setpoints” (Pet. 42 (citing Ex. 1004 ¶ 253 (“FIG. 3d shows two set points for the home 2.18 that the thermostat 1.30D has recorded.”); Ex. 1002 ¶ 119));

(2) “thermostat 1.30D is a node having a node processor 2.02 [and] memory 2.04” (Pet. 42 (citing Ex. 1004 ¶¶ 229, 268; Ex. 1002 ¶ 119)); and

(3) “any node 1.10 in the system may assume the processing and/or the control of one or more devices and/or the storage of system data 1.02” (Pet. 42 (citing Ex. 1004 ¶ 268)). Thus, Petitioner contends that it would have been obvious for “the thermostat 1.30D to record and store actual setpoints of the HVAC system because the thermostat is the location at which the setpoint is maintained and implemented” and that “memories of, e.g., thermostat 1.30D or gateway node 1.10D would include multiple collections of data, including for storing setpoint information.” *Id.* (citing Ex. 1004 ¶¶ 116, 141, 150, 155; Ex. 1002 ¶ 119).

Patent Owner does not address Petitioner’s contentions as to this limitation.

j) *Limitation 17j: the one or more computer processors configured to compare the one or more automated setpoints associated with said scheduled setpoint programming with said actual setpoint programming*

Petitioner contends that Ehlers and Wruck render obvious this limitation. Pet. 43 (citing Ex. 1002 ¶ 124). According to Petitioner, because Ehlers’s system can detect a manual change to a setpoint, as described in limitations 17a and 17i above, a person of ordinary skill in the art would have understood that, in order to track and learn from the user’s changes to setpoints, “Ehlers’s system would logically detect when a user has made a manual change to the setpoint.” *Id.* at 43–44 (citing Ex. 1004 ¶¶ 242–243, 268, 308, 309; Ex. 1002 ¶ 124).

Petitioner also explains that a person of ordinary skill in the art would have known to compare the user's "actual" setpoint programming with "automated" setpoints in the scheduled setpoint programming. Pet. 44. According to Petitioner, to "determine whether two numbers are same or different from each other, a [person of ordinary skill in the art] would have understood that they would be compared." *Id.* (citing Ex. 1002 ¶ 125). Petitioner further explains that Ehlers does not specify the precise manner in which its system detects when a user has manually changed the setpoint but does use "a comparison between values to determine whether to take certain actions." *Id.* (citing Ex. 1002 ¶ 125; Ex. 1004 ¶ 215 ("In one embodiment, this decision may be based on a simple comparison between the actual cost and a predetermined value which may have been input by the customer.")).

Petitioner further contends that, "to the extent comparing one setpoint to another was not already obvious from Ehlers," it would have been obvious from Ehlers and Wruck "to compare an automated setpoint associated with scheduled setpoint programming with the actual setpoint programming in order to determine whether they are the same or different from each other, and thus detect a manual change." Pet. 45–46 (citing Ex. 1002 ¶ 128). According to Petitioner, Ehlers teaches tracking user setpoint changes to learn how the user's desired setpoints differ from the automated setpoints. *Id.* at 46 (citing Ex. 1004 ¶¶ 242–243, 268, 308, 309; Ex. 1002 ¶ 128).

In response to Petitioner's contentions, Patent Owner argues that Ehlers and Wruck do not disclose "a computer to compare an *automated setpoint* (i.e., a computer-calculated setpoint) with an *actual setpoint*, which allows the patented system to determine if the setpoints that the computer is

calculating are acceptable to the user, or if the user is fighting with or opting-out of the automated programming.” Prelim. Resp. 1. According to Patent Owner, Petitioner only alleges that Ehlers “can detect a manual change to a setpoint” and that Ehlers learns what temperatures the user prefers but fails to identify: (1) the “automated setpoint” that is “stored” in a “database,” (2) “the one or more automated setpoints,” or (3) where Ehlers compares the user’s actual setpoints with a setpoint that was *calculated by a computer*, i.e., the claimed “automated setpoint.” *Id.* at 4–5.

We do not agree with Patent Owner’s arguments. Based on the present record, Petitioner adequately explains where Ehlers discloses the recited automated setpoint is stored in a database and Ehlers compares the user’s actual setpoint and the automated setpoint. In connection with limitation 17f above, Petitioner, referring to Figures 3D and 3E reproduced above, explains that Ehlers uses stored indoor and outdoor temperatures and other stored data to predict changes in temperature inside the structure in response to at least changes in outside temperatures in connection with certain energy management functions. Pet. 34 (citing Ex. 1002 ¶ 104). Petitioner presents three examples of this. *See id.* at 34–36. For example, in Petitioner’s first example, Petitioner explains that Ehlers’s thermal gain rate is used to calculate a new offset temperature in order to save energy and, in so doing, Ehlers (1) “predicts that the thermal gain rate it computed in the past represents a speed at which temperatures inside the structure will change in response to changes in outside temperatures at the current time or at a future time” and then (2) “uses this prediction to determine what future setpoint would not increase HVAC run time over a future period of time to ‘compute[] [a] required effective setpoint offset.’” *Id.* at 34–35 (citing Ex.

1004 ¶ 256; Ex. 1002 ¶ 104) (alterations in original). Patent Owner does not explain why this example or Petitioner's other two examples do not show that Ehlers calculates the claimed "automated setpoints."

In connection with limitation 17i above, Petitioner adequately explains that a person of ordinary skill in the art would have understood that it would have been obvious to utilize a "database" to store the automated setpoints, for example in the memory of the gateway node 1.10D. Pet. 40 (citing Ex. 1004 ¶¶ 150, 153–157, 268; Ex. 1002 ¶ 115). Patent Owner does not explain why Petitioner is wrong.

Petitioner also explains that a person of ordinary skill in the art would have known to compare the user's "actual" setpoint programming with "automated" setpoints in the scheduled setpoint programming. Pet. 44. According to Petitioner, to determine whether two numbers are same or different from each other, a person of ordinary skill in the art would have understood that they would be compared. *Id.* (citing Ex. 1002 ¶ 125). Petitioner further explains that Ehlers compares two values to determine whether to take certain actions. *Id.* (citing Ex. 1002 ¶ 125; Ex. 1004 ¶ 215 ("In one embodiment, this decision may be based on a simple comparison between the actual cost and a predetermined value which may have been input by the customer.")). Patent Owner does not explain why Petitioner is wrong.

As to Wruck, Patent Owner contends that Petitioner's allegations are conclusory and unsupported in Wruck. Prelim. Resp. 7 (citing Pet. 44–45). According to Patent Owner, Wruck teaches checking "whether the Delta value between the actual temporary setpoint and the scheduled setpoint is not equal to zero," but displaying a user's manual adjustment to a *scheduled*

setpoint has no bearing on whether it would be obvious to compare an *automated* setpoint with an actual setpoint. *Id.* (citing Pet. 44–45).

We do not agree with Patent Owner’s argument because it mischaracterizes Petitioner’s contentions. As discussed above, Petitioner contends that Ehlers teaches or suggests *comparing* the user’s “actual” setpoint programming with “automated” setpoints in the scheduled setpoint programming but, if Ehlers does not, then Wruck does. More specifically, Petitioner contends that “Wruck teaches that it was known to compare a user desired setpoint with a calculated setpoint in order to determine if the user has overridden the setpoint programming, and if the difference in setpoints is not equal to zero, display the temporary setpoint.” Pet. 44 (citing Ex. 1005 ¶ 110; Ex. 1002 ¶ 126). Patent Owner does not explain why Petitioner is wrong.

k) Conclusion

After reviewing Petitioner’s assertions with respect to claim 17 and the supporting evidence, we determine that Petitioner has established a reasonable likelihood of prevailing with respect to its challenge of independent claim 17. Petitioner’s contentions are adequately supported by Mr. Auslander’s testimony (Ex. 1002).

2. Claims 18–23

Petitioner, citing the supporting declaration of Mr. Auslander, provides a limitation-by-limitation comparison of Ehlers and Wruck to claims 18–23. Pet. 46–48. Patent Owner relies on the same arguments made in connection with claim 17 and does not separately address claims

18–23. *See* Prelim. Resp. 1–7. Based on the present record, Petitioner has established a reasonable likelihood of prevailing on its challenges of claims 18–23.

E. Ground 2: Asserted Obviousness of Claims 17–23 Over Ols, Boait, and Wruck

Petitioner asserts that claims 17–23 are unpatentable under 35 U.S.C. § 103 as being obvious over Ols (Ex. 1006), Boait (Ex. 1007), and Wruck (Ex. 1005). Pet. 48–74. Petitioner, relying on the supporting declaration of Mr. Auslander (Ex. 1002), provides a limitation-by-limitation comparison of Ols, Boait, and Wruck to these claims. *Id.*

Patent Owner filed a Preliminary Response opposing Petitioner’s challenge. Prelim. Resp. 1–7. As this stage, Patent Owner’s sole argument is that the prior art does not teach or suggest “a computer to compare an *automated setpoint* (i.e., a computer-calculated setpoint) with an *actual setpoint*, which allows the patented system to determine if the setpoints that the computer is calculating are acceptable to the user, or if the user is fighting with or opting-out of the automated programming,” as recited in limitation 17j. *Id.* at 1.

As discussed above in Ground 1, we determine Petitioner has shown a reasonable likelihood of prevailing on its obviousness challenge of at least one claim. To aid the parties, we address the parties’ contentions as to limitation 17j, the only limitation contested by Patent Owner.

1. *Limitation 17j: the one or more computer processors configured to compare the one or more automated setpoints associated with said scheduled setpoint programming with said actual setpoint programming*

Petitioner contends that the combined teachings of Ols, Boait, and Wruck render obvious this claim element. Pet. 69–71 (citing Ex. 1002 ¶ 197). According to Petitioner, Ols (1) calculates a rate of change of temperatures inside a structure in response to changes in outside temperature (*id.* at 59–63), and (2) calculates new setpoint temperatures (i.e., the recited “automated setpoints”) based on the predicted rate of temperature change (*id.* at 63–68). Petitioner explains that Ols teaches that these setpoint temperatures 1024 “may be part of code 834 and/or code 904 associated with computer 800 and/or memory system 900 of remote server 132” and that these “setpoint temperatures may be stored in memory on computer 120 or remote server 132. *Id.* at 68 (citing Ex. 1006, 31:43–32:20; Ex. 1002 ¶ 194). Petitioner also explains that Boait discloses that the determined temperature profile can be “used by various inference and control processes” and a person of ordinary skill in the art would have understood that “the temperature profile would be stored in a database in order for it to be used by various inference and control processes.” *Id.* (citing Ex. 1007, 21; Ex. 1002 ¶ 194).

According to Petitioner, Ols’s system detects a manual change to a setpoint and Ols teaches recognizing a user override of the setpoint where “[u]pon selecting desired temperature 614[,], a user may input a value representing a new desired temperature.” Pet. 69–70 (citing Ex. 1006, 31:20–42; Ex. 1002 ¶ 197) (first alteration in original). Petitioner explains that a person of ordinary skill in the art would have understood that “to save

a new user desired temperature, a processor in, for example, computer 120, would determine when a user has manually changed the setpoint to be different from what was previously programmed.” *Id.* at 70 (citing Ex. 1002 ¶ 197).

Petitioner asserts that, while Ols does not detail the manner in which its system compares a user’s change to what had been set, it is obvious to “compare (or ‘analyze to determine one or more similarities or differences between’) the one or more automated setpoints associated with said scheduled setpoint programming with said actual setpoint programming.” Pet. 70 (citing Ex. 1002 ¶¶ 197–198). Petitioner also asserts that, “[t]o save a new desired user temperature, Ols’s system would need to determine whether two numbers are the same or different from each other, which indicates a comparison.” *Id.*

As discussed in Ground 1 above, Petitioner again contends that “Wruck teaches determining whether a user’s manually-entered setpoint differs from a scheduled setpoint by comparing an actual temporary setpoint and a scheduled setpoint, as shown in table 28.” Pet. 70 (citing Ex. 1005, Table 28, ¶ 110; Ex. 1002 ¶ 199). More specifically, “Wruck teaches to check whether the ‘Delta value’ between the actual temporary setpoint and the scheduled setpoint is not equal to zero, and if so, to display the temporary setpoint.” *Id.* (citing Ex. 1002 ¶ 200). According to Petitioner, to the extent detecting a manual change by comparing the actual setpoint to the automated setpoint was not already obvious from Ols, Wruck teaches doing so. *Id.* at 71.

In response to Petitioner’s contentions, Patent Owner argues that Ols and Wruck do not disclose “a computer to compare an *automated setpoint*

(i.e., a computer-calculated setpoint) with an *actual setpoint*, which allows the patented system to determine if the setpoints that the computer is calculating are acceptable to the user, or if the user is fighting with or opting-out of the automated programming.” Prelim. Resp. 1; *see also id.* at 7–10. According to Patent Owner, Petitioner “only alleges that Ols ‘teaches recognizing a user override of the setpoint where upon selecting desired temperature 614 a user may input a value representing a new desired temperature’ and that Ols would ‘determine when a user has manually changed the setpoint to be different from what was previously programmed.’” *Id.* at 8 (citing Pet. 69–70). Patent Owner states that Petitioner fails to show (1) the “automated setpoint” that is “stored” in a “database,” (2) “the one or more automated setpoints,” or (3) where Ols compares the user’s actual setpoints with a setpoint that was *calculated by a computer*, i.e., the claimed “automated setpoint.” *Id.* at 8–9.

We do not agree with Patent Owner’s arguments. Based on the present record, Petitioner adequately explains where Ols discloses the recited automated setpoint is stored a database and Ols compares the user’s actual setpoint and the automated setpoint as recited in limitations 17h and 17j. For example, Petitioner contends that Ols teaches the “one or more automated setpoints” (i.e., calculated setpoints) recited limitation 17g by disclosing that Ols “set point temperature[s] 1024 [are] a computed value to which the temperature of the room is to be set.” Pet. 65 (citing Ex. 1006, 31:20–42; Ex. 1002 ¶ 190) (alterations in original). Petitioner explains that a person of ordinary skill in the art would have understood that “setpoint temperatures 1024 includes a plurality of computed values so as to provide a schedule of operation for the climate control system 100” and it would have

been obvious “to utilize the determined predicted rate of change as a factor in ‘computing’ a schedule of automated setpoints, or ‘a computer-calculated temperature setting for a thermostat to achieve or maintain.’” *Id.* (citing Ex. 1002 ¶ 190). Petitioner also adequately explains that to the extent detecting a manual change by comparing the actual setpoint to the automated setpoint was not already obvious from Ols, Wruck teaches doing so to determine when to change the display. *Id.* at 71 (citing Ex. 1002 ¶¶ 200–201). Patent Owner does not explain why Petitioner is wrong.

2. *Claims 18–23*

Petitioner, citing the supporting declaration of Mr. Auslander, provides a limitation-by-limitation comparison of Ols, Boait, and Wruck to claim 18–23. Pet. 71–74. Patent Owner relies on the same arguments made in connection with claim 17 and does not separately address claims 18–23. *See* Prelim. Resp. 1–4, 7–10. Petitioner’s contentions are adequately supported by Mr. Auslander’s testimony (Ex. 1002).

F. *Discretionary Denial Under 35 U.S.C. § 314(a)*

Patent Owner contends that we should deny institution because of the co-pending Delaware litigation (*ecobee, Inc. v. EcoFactor, Inc.*, 1-21-cv-00323, (D. Del. March 2, 2021). Prelim. Resp. 1–2, 10–11 (citing *Apple Inc. v. Fintiv Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”)). Patent Owner argues that the Board should not institute this *inter partes* review in view of our precedent and based on the advanced state of the parallel Delaware litigation. *Id.* at 1–2. For the

reasons that follow, we decline to exercise our discretion to deny the Petition on that basis.

Even when a petitioner has demonstrated that it is likely to prevail in showing one of the claims is unpatentable, the Board has discretion to deny a petition. *See Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential). Several nonexclusive factors that balance considerations of system efficiency, fairness, and patent quality when a patent owner raises an argument for discretionary denial due to the advanced state of a parallel proceeding are:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Fintiv, Paper 11 at 5–6. “[I]n evaluating the factors, the Board takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* at 6; *see also Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings With Parallel District Court Litigation* (June 21, 2022) (“Director’s *Fintiv*

memo”) (*see* page 9 stating this Memorandum “applies to all proceedings pending before the Office” and instructing how the Board is to apply *Fintiv*).⁵

1. *Evidence of a Stay*

As there is no evidence of a stay in the parallel district court proceeding, this factor is neutral. Pet. 74–75; Prelim. Resp. 13–14; *see Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative) (finding that, absent evidence a stay will be granted, this factor does not weigh for or against discretionary denial); *Sand Revolution II, LLC v. Cont’l Intermodal Grp.–Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) (finding same).

2. *Court’s Trial Date*

The parties state that the district court trial date is December 11, 2023. Pet. 74; Prelim. Resp. 15. The Final Written Decision is expected by November, 2023, which is about one month *before* the district court trial date. Thus, we determine that this factor does not favor exercising discretion to deny institution.

3. *Investment in the Parallel Proceeding*

Petitioner submits that “[n]either the parties nor the court has invested substantial resources” in the Delaware litigation. Pet. 74–75.

⁵ https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

Patent Owner asserts that the parties and the district court have expended substantial resources “as discovery has opened, the parties have exchanged initial infringement and invalidity contentions and claim construction has started.” Prelim. Resp. 11.

The effort and resources expended to date, as described by Patent Owner, appear typical of the early stages of litigation. Thus, this does not favor exercising discretion to deny institution.

4. *Overlap of Issues*

Petitioner asserts, “the parties have neither narrowed the asserted claims nor the asserted prior art references and thus it is premature to evaluate the eventual overlap between the proceedings.” Pet. 75.

Patent Owner argues that “the same claims and claim construction standard are at issue in both proceedings, and there is substantial overlap in invalidity theories and prior art.” Prelim. Resp. 19.

Initially, we note the Patent Owner is correct that the same claims and prior art and invalidity issues are presented in the Delaware litigation and this proceeding. However, given the facts of this case, there should not be any overlap by the time of trial because we will issue a Final Written Decision before expected Delaware trial date. Thus, Petitioner will be estopped from presenting any argument which it actually raised or reasonably could have raised during this proceeding. 35 U.S.C. § 315(e)(2). Accordingly, this factor weighs against exercising our discretion to deny the Petition.

5. *Identity of Parties*

Patent Owner asserts this factor weighs against institution because the parties here are the same parties involved in the parallel Delaware litigation. Prelim. Resp. 21. However, due to the statutory estoppel provision of section 315(e)(2), as the Final Written Decision will precede the trial before the district court, this factor weighs against exercising our discretion to deny the Petition.

6. *Other Circumstances and Considerations, Including the Merits*

The factors considered in the exercise of discretion are part of a balanced assessment of all the relevant circumstances in the case, including the merits. *Fintiv*, Paper 11 at 14. For example, if the merits of a ground raised in the petition seem particularly strong on the preliminary record, this fact has favored institution. *Id.* at 14–15. By contrast, if the merits of the grounds raised in the petition are a closer call, then that fact has favored denying institution when other factors favoring denial are present. *Id.* at 15.

Petitioner argues that “the merits of the petition are strong” (Pet. 75) while Patent Owner argues “the merits of the Petition are not strong” (Prelim. Resp. 21–22).

We determine that this factor is neutral.

7. *Weighing the factors—holistic view*

We have considered the circumstances and facts before us in view of the *Fintiv* factors. Our analysis is fact driven and no single factor is determinative under § 314(a).

Based on the circumstances presented, we determine that, as a whole, the factors weigh against our exercising discretion to deny institution of the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, *inter partes* review of claims 17–23 of U.S. Patent No. 8,442,550 B2 is instituted on all grounds in the Petition; and

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

IPR2022-00969
Patent 8,596,550 B2

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