

SMA Solar Technology America, LLC
(Petitioner)

v.

Tigo Energy, Inc. (Patent Owner)

Petitioner Demonstratives

Case Nos. IPR2023-00879

U.S. Patent No. 9,584,021

Arguments Outline

- ▶ **Mieth anticipates all the claims in Ground A of the Petition**
 - ▶ For Genus/Species situations: *Eli Lilly & Co. v. Zenith Goldline Pharm., Inc.* (“Zenith”). Mieth’s “load” is a genus term that is definite and limits the class of species therein, and thus anticipates the claimed micro-controller.
 - ▶ PTAB Dispositive Standard Test: a PHOSITA reasonably understand or infers from Mieth that the micro-controller is disclosed: *Eli Lilly & Co. v. L.A. Biomedical Research Inst.*
 - ▶ Patent owner’s arguments on anticipation are conclusory and not supported by extrinsic evidence. Patent Owner submitted no expert report to support their arguments.

- ▶ **The anticipation/obviousness arguments are not new arguments under the facts of this case or are proper under Federal Circuit case law**
 - ▶ The Petition asserted Mieth’s load “includes” a micro-controller and is anticipatory; not a new argument
 - ▶ Patent Owner in POR argues Mieth is neither anticipatory nor renders the micro-controller obvious
 - ▶ *Anacor Pharms Inc. v. Iancu* holds arguments and evidence introduced after petition stage proper when in reply to arguments made by patent owner in POR

- ▶ **The combination of Mieth and Balogh is proper and renders all the claims in Ground B obvious**

The '021 Patent

The '021 Patent Overview

Fig. 4 shows a power supply having a first stage 401 and a second stage 402. The first stage 401 receives a fluctuating input voltage (V_{IN}) from a photovoltaic (“PV”) panel and outputs a first voltage (V_{BUCK1}) at a first output.

The second stage 402 is connected to the first stage 401. Ex.1001,1:51-56; Ex.1007, ¶ 63. The second stage 402 operates in two states: (1) a first, deactivated state, and (2) a second, enabled state. Ex.1001,8:28-58; Ex.1007, ¶ 63. Paper 1, pp. 7-8.

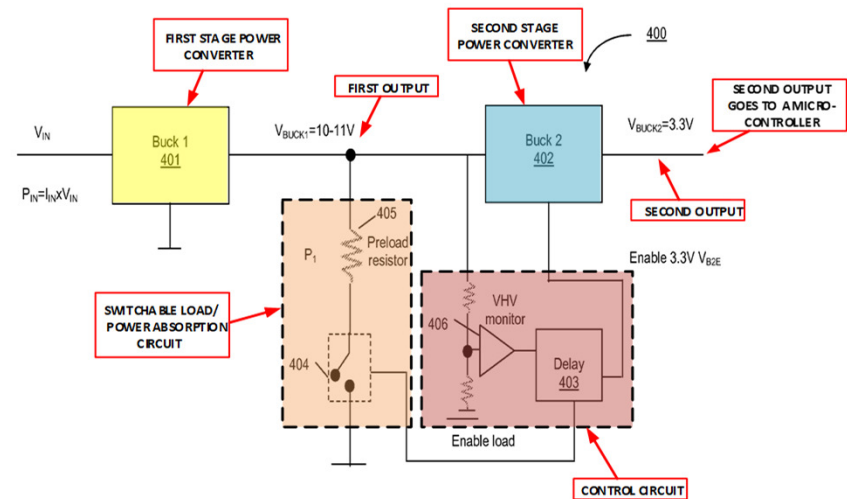


Figure 4

Ex. 1001, '021 Patent, Fig. 4
(annotated)

The '021 Patent Overview (cont.)

In state 1 (deactivated state), the first voltage (V_{BUCK1}) is less than a threshold voltage, causing a control circuit 406, 403 to close switch 404, thereby “switching in” a preload resistor 405, while the control circuit 406, 403 disables the second stage 402. Ex.1001, 8:22-23; 8:35-37; Ex.1007, ¶ 64.

Thus, for “low” first voltage values, the second stage 402 is off, while the preload resistor 405 consumes electrical energy from the first stage 401.
Paper 1, pp. 7-8.

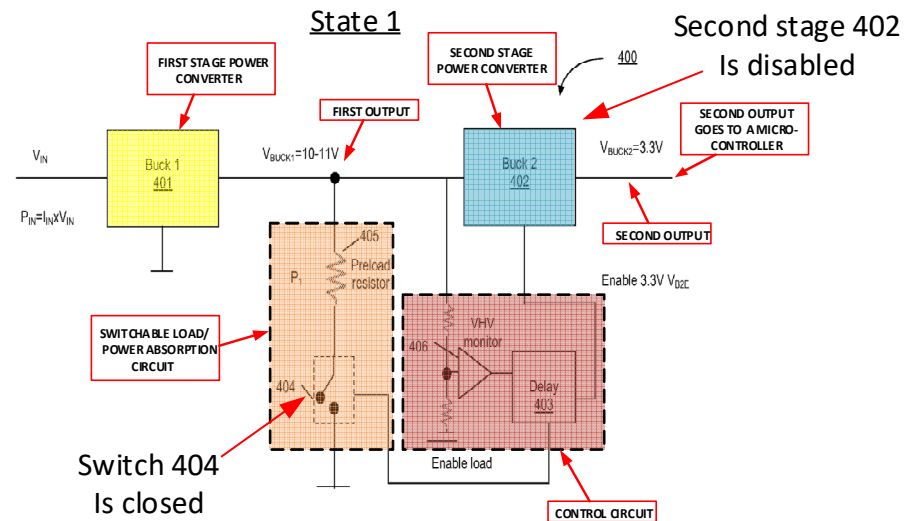


Figure 4

The '021 Patent Overview (cont.)

In state 2 (enabled state), the first voltage (V_{BUCK1}) is greater than the threshold voltage, causing the control circuit 406, 403 to open switch 404, thereby “switching out” the preload resistor 405, while the control circuit 406, 403 enables (“turns on”) the second stage 402 after a time delay. Ex.1001, 8:40-48; Ex.1007, ¶ 64.

Thus, for “high” first voltage values, the second stage 402 turns on after the preload resistor 404 is switched out, resulting in the second stage 402 providing electrical energy to the load (e.g., the micro-controller) at the second output. Ex.1001, 8:28-34. Paper 1, pp. 7-8, Paper 19, pp. 7, 9.

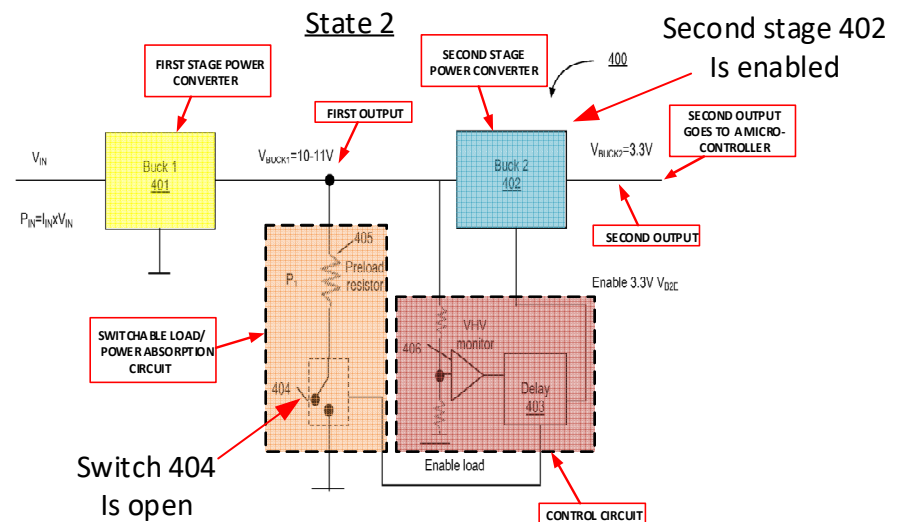
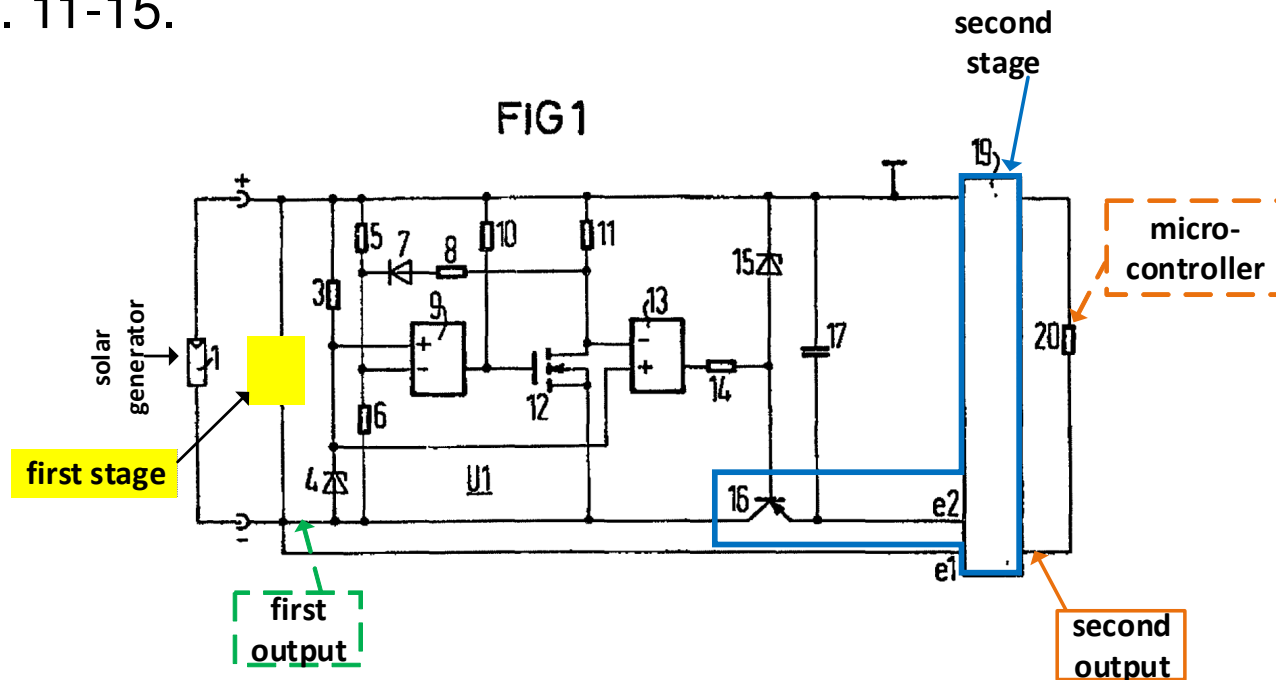


Figure 4

Mieth (Ex. 1002)

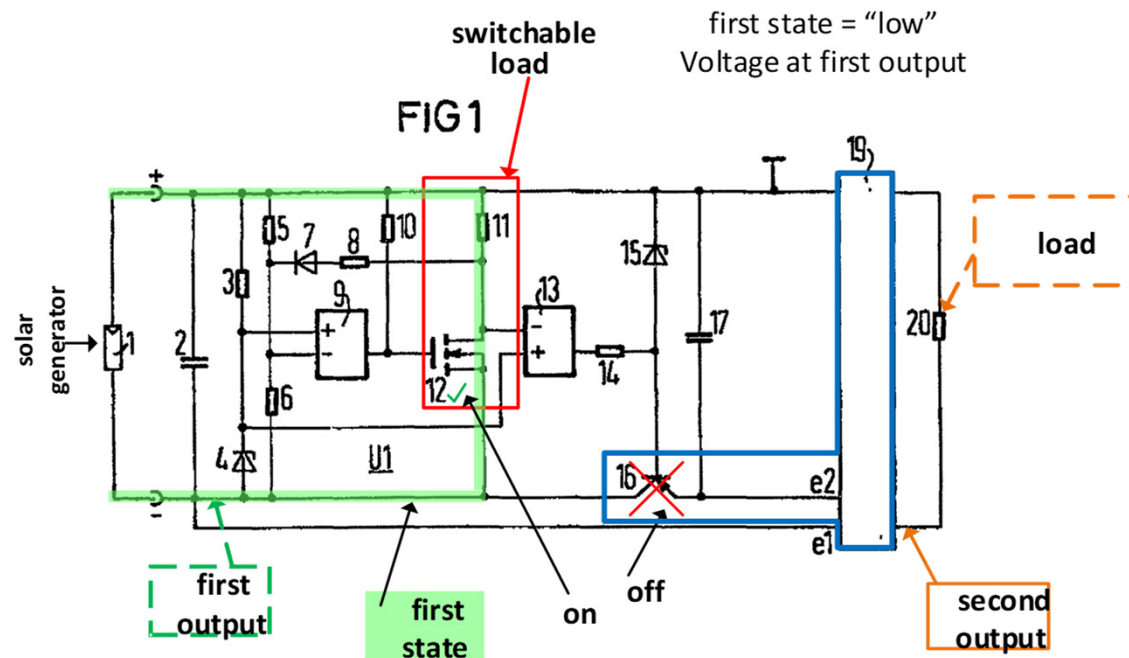
Mieth Overview (Ex. 1002)

Mieth (Ex. 1002) discloses circuitry for providing a voltage to a load for energy sources supplied thereto that vary in performance, like a PV solar generator (due to time of day/weather conditions). The circuitry operates in two different states, depending on the power provided at the solar generator 1. Ex.1002, 1:23-28; 5:22-27; Ex.1007, ¶ 69. Paper 1, pp. 11-15.



Mieth Overview (Ex. 1002)

In the first state (when first output voltage is “low”), a first comparator 9 turns transistor 12 “on” to switch “in” the switchable load 11, and a second circuit 13 turns transistor 16 “off” to disable the downstream power supply circuit 19, thus preventing energy supply to the load 20). Ex.1002, 6:14-23; 9:15-32; Ex.1007, ¶ 71. Paper 1, pp. 11-15.

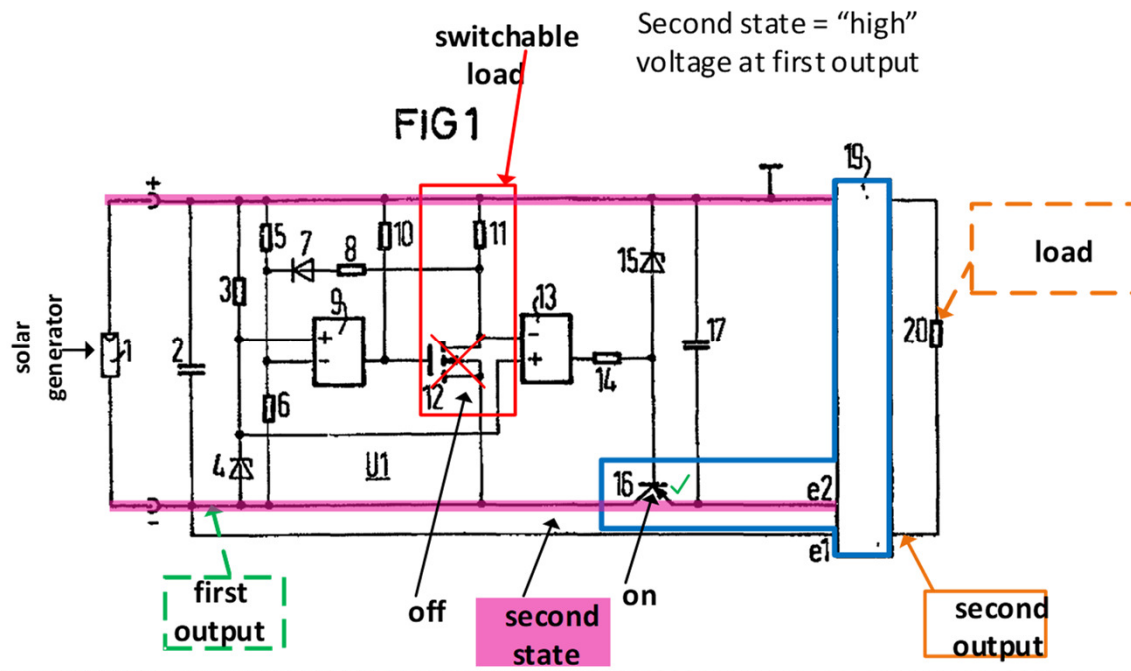


Mieth Overview (Ex. 1002)

In the second state (when first output voltage is “high”), the voltage at first comparator 9 exceeds a reference voltage, causing first comparator 9 output to transition “low” and turn off transistor 12 (i.e., “switching out” the switchable load/resistor 11).

With transistor 12 off, the second comparator 13 output goes “low”, turning on transistor 16. With transistor 16 conducting, the first output is passed to the e2 input of power converter 19, enabling such circuitry, which provides the second output to load 20.

Ex.1002,12:21-30; Ex.1007, ¶ 75. Paper 1, pp. 11-15.



Anticipation; 35 U.S.C. § 102

Anticipation for genus/species

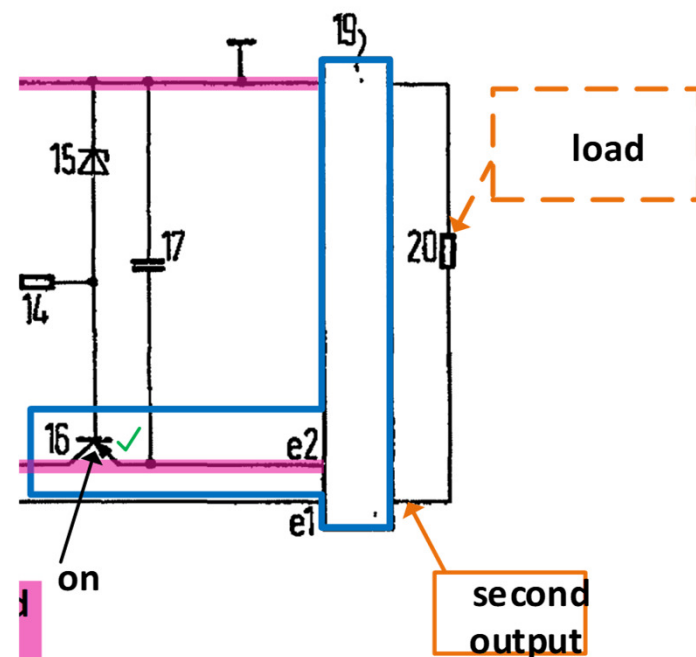
A genus element disclosed in a prior art reference does not automatically anticipate each species within the disclosed genus. Paper 19, p. 5.

A disclosed genus **does** anticipate each species therein under select circumstances; ***when the genus is such a defined and limited class that a PHOSITA can “at once envisage” each member of the genus.*** *Eli Lilly & Co. v. Zenith Goldline Pharm, Inc.*, 471 F. 3d 1369, 1376 (Fed. Cir. 2006)(“Zenith”). Paper 19, p. 5.

Anticipation for genus/species

Mieth discloses a load 20 connected to a second output of a power converter 19. Ex. 1002, Fig. 1; Ex. 1007, ¶ 104. The term “load” is a well-defined term of art in the field of electronics. Ex. 1023, ¶¶ 22-30. The Petition asserts that the load 20 “includes” a micro-controller. Paper 1, p. 26.

The word “include” means “to take in or comprise as a part of a whole or group.” Merriam-Webster Dictionary. Thus, the Petition indicates Mieth’s load constitutes a genus term that anticipates the micro-controller as a species of such genus.



Anticipation in the case of genus/species

A load is any circuit, device or apparatus that, when connected to a source of electrical energy, consumes electrical energy. Paper 19, p. 7, Ex. 1023, ¶¶ 4-21; Ex. 1018, p. 156.

This definition of load as an element that consumes electrical power was adopted by the District Court in the concurrent litigation. Paper 19, p. 6, Ex. 1017, p. 3.

The definition **defines and limits the scope of the genus class**. A PHOSITA can evaluate any circuit, circuit element or electrical device in its context and with certainty ascertain whether it constitutes a load. Paper 19, p. 7, Ex. 1023, ¶¶ 4-21.

Anticipation in the case of genus/species

Petitioner submitted evidence that a PHOSITA can at once envisage each member of the genus “load.” Paper 1, p. 25, Ex. 1007, ¶ 105; Ex. 1014, 1180, Fig. 5. Ex. 1023, ¶¶ 22-30, Paper 19, p. 7.

The '021 Patent itself uses the term “load” as a genus and lists its micro-controller as a species thereof.

“Circuit (400) therefore can be used to address the false start problem that occurs when the Solar panel is able to provide enough output voltage when it is not connected to the output, but not enough to sustain even a small current provided ***by the buck converter (402) to its load, such as a control logic, a control circuit, a micro-controller, etc.***” Ex. 1001, 8: 28-34.

Anticipation in the case of genus/species

Patent Owner (“PO”) argues *Zenith* does not support Petitioner’s position because *Zenith* did not find a claim anticipated by a genus. Paper 24, p. 6.

Zenith is not cited by Petitioner for its holding on the facts, but rather for ***setting forth the standard by which a court determines whether a disclosed genus anticipates a claimed species.*** Paper 19, pp. 6-7.

PO fails to apply the *Zenith* standard to the facts of this case, and argues, without supporting evidence, that Petitioner has not shown that Mieth’s load is a definite and limited class. Paper 24, pp. 6-7. This is incorrect. Paper 19, pp. 6-7; Ex. 1023, 4-30; Ex. 1017, p. 3; Ex. 1018, p. 156.

Anticipation in the case of genus/species

Petitioner has shown with extrinsic evidence that Mieth's load anticipates the claimed micro-controller under the *Zenith* standard as ***“load” as construed by the District Court and understood by a PHOSITA defines and limits the scope of the class.*** As such, a micro-controller, as recited in the claims, is a species of the genus load. Paper 1, p. 25; Paper 19, pp. 6-7.

PO provides no extrinsic evidence to support contention that “load” does not meet the *Zenith* standard. PO's arguments are conclusory, not supported by evidence, and should not be given weight. Paper 24.

PTAB's Dispositive Standard Test

In addressing anticipation, the Institution Decision stated:

[T]he dispositive question is ***whether one skilled in the art could have reasonably understood or inferred from a prior art reference*** that every claim element is disclosed in that reference. *Eli Lilly & Co. v. L.A. Biomedical Research Inst.*, 849 F. 3d 1073, 1074-75 (Fed. Cir. 2017)(Emphasis added). Paper 9, p. 7.

Under this dispositive standard test, anticipation is found ***when a PHOSITA can understand and/or infer*** that the teaching of Mieth's load constitutes an express disclosure of the micro-controller. Thus, the standard requires extrinsic evidence of a PHOSITA.

PTAB's Dispositive Standard Test

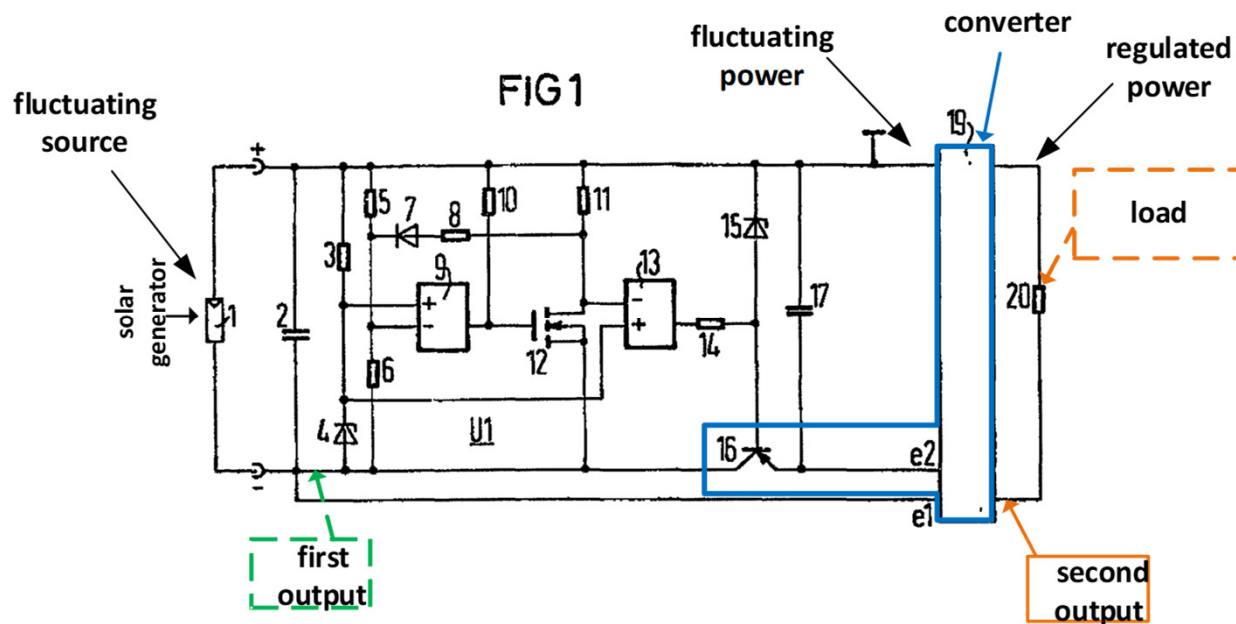
PO argued Mieth's load 20 does not expressly disclose a micro-controller. Paper 18, p. 12. This is incorrect.

The Petition and Expert Report cited to load 20 of Mieth and Ex. 1014, Fig. 5 to support its assertion that Mieth anticipates the micro-controller. Paper 1, pp. 25-26; Ex. 1007, ¶¶ 103-106.

Based on the teachings of Mieth and Ex. 1014, Fig. 5, a PHOSITA would reasonably understand or infer from Mieth that a micro-controller was disclosed therein. Ex. 1023. ¶¶ 31-33. Paper 19, pp. 8-10.

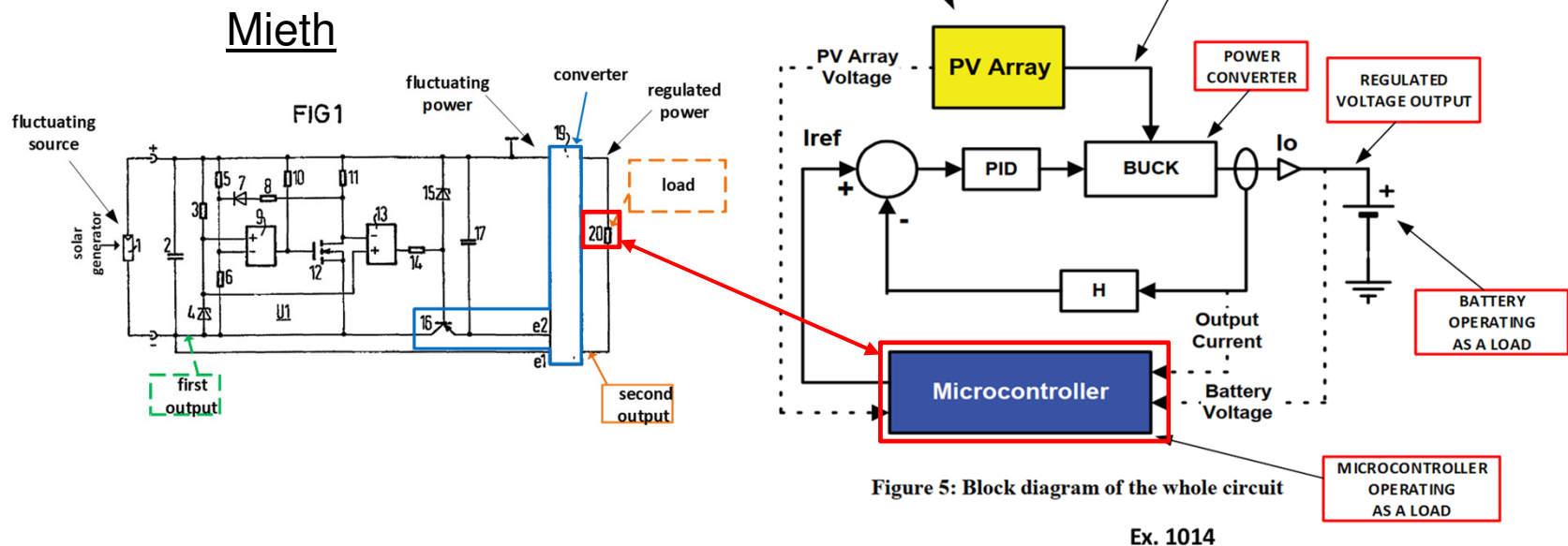
PTAB's Dispositive Standard Test

Mieth teaches that load 20 receives power from a solar generator 1 exhibiting fluctuating performance through a power converter 19 that regulates the voltage to the load. Ex. 1002; 1:19-28; 2:1-15; 4:30-5:2; 8:8-9; Paper 19, p. 8.



PTAB's Dispositive Standard Test

Like Mieth, Fig. 5 of Ex. 1014 shows a fluctuating source (PV array) driving a power converter to provide a regulated output voltage to two different loads, where one of the loads is a micro-controller. Paper 19, pp. 8-10.



PTAB's Dispositive Standard Test

Petitioner's expert report discusses Fig. 5 of Ex. 1014, stating:

“Since the introduction of the Intel 8051 circa 1980, the micro-controller has become ubiquitous in electronic systems. When these devices are powered, invariably, the raw power source is the ac mains, a battery or some other ***unregulated source that must be reduced and stabilized. Thus it is commonplace for a micro-controller to load the output of a voltage regulator....***

For example, Arias et al. ([sic Ex.1014]) illustrates a PV system with a buck converter powering a microcontroller operating as a load.” Ex. 1007, ¶ 105. (Emphasis added).

Paper 19, p. 10.

PTAB's Dispositive Standard Test

The '021 Patent, like both Mieth and Ex. 1014, discloses a fluctuating source that provides power to a power converter (buck 2, 402) that regulates the voltage thereof for provision **to a load, which can include a micro-controller.** Ex. 1001; 2:54-56; 8:19-26. Paper 19, p. 9.

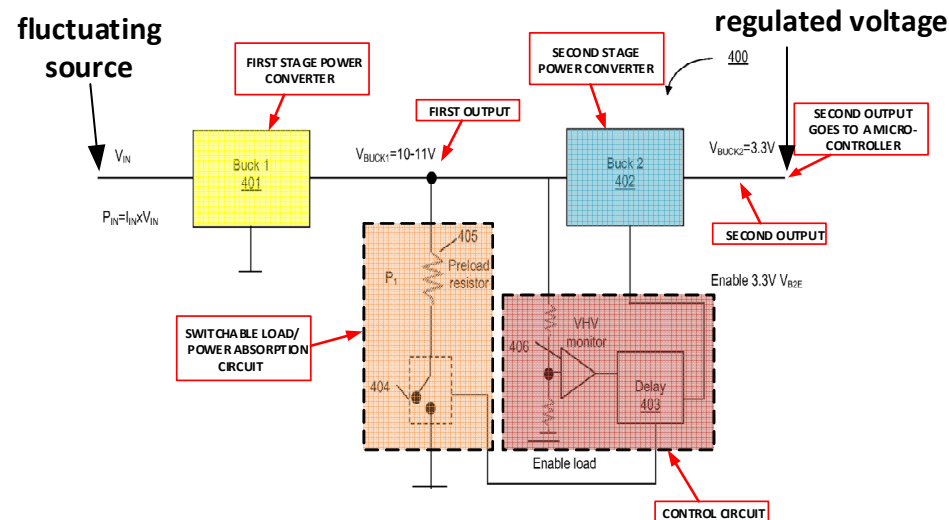


Figure 4

PTAB's Dispositive Standard Test

The '021 Patent states:

“Circuit (400) therefore can be used to address the false start problem... when the solar panel is able to provide enough output voltage... but not enough to sustain even a small current **provided by the buck converter (402) to its load, such as a control logic, a control circuit, a micro-controller, etc.**” (Ex. 1001, 8:28-34)(Emphasis added).

And,

Typically, the load of resistor P1 (405) should exceed the load of buck converter (402) **(buck converter's load being the MCU which is not shown)....** (Ex. 1001, 8:55-58)(Emphasis added).

Paper 19, p. 9.

PTAB's Dispositive Standard Test

Mieth and the '021 patent provide the same functionality, they:

- (1) receive energy from a **fluctuating power source**,
- (2) regulate it with a **power converter**, and
- (3) deliver the **regulated power** (electrical energy) via a voltage to an **electrical element** that:
 - (a) requires regulated energy,
 - (b) consumes such electrical energy, and
 - (c) performs a useful work function.

Functions (a)-(c) define a load. Paper 19, pp. 8-11.

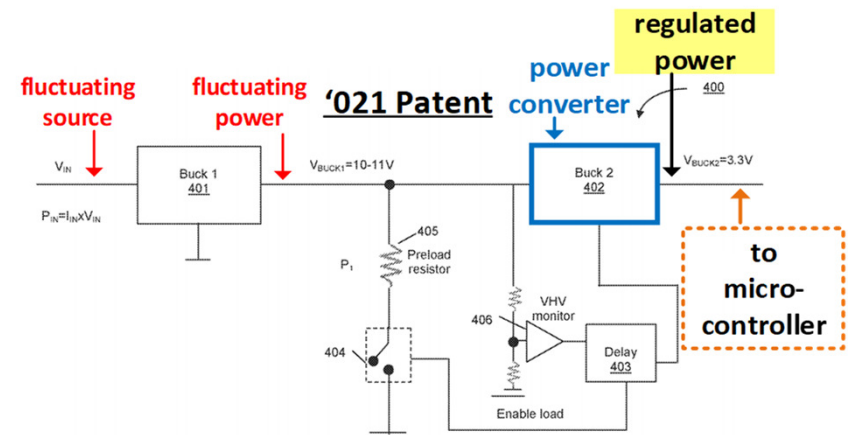
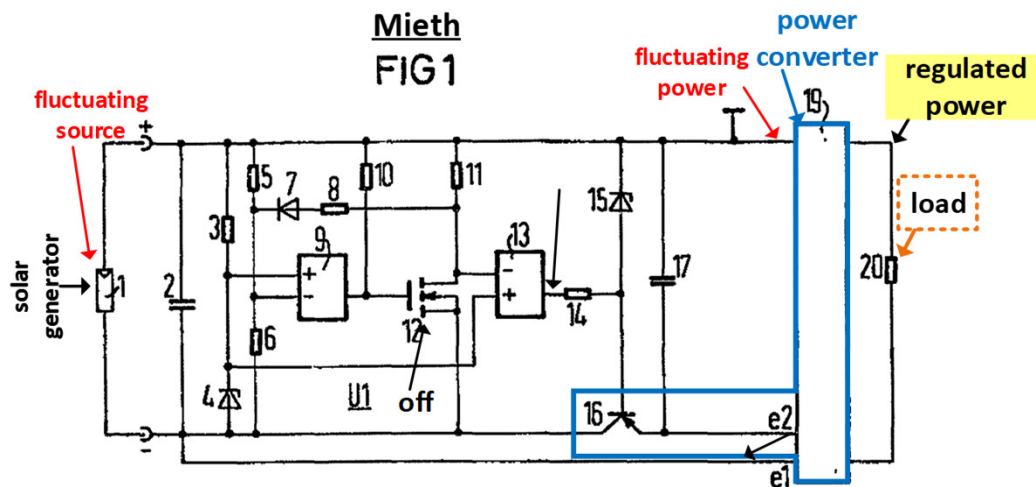


Figure 4

PTAB's Dispositive Standard Test

Therefore, based on Mieth, the '021 Patent admission, and the general knowledge of a PHOSITA provided by Ex. 1014, ***a PHOSITA reasonably understands or infers that Mieth is disclosing the same element (i.e., a micro-controller) as recited in the claims of the '021 patent.*** Ex. 1023, ¶¶ 32-40; Ex. 1014, Fig. 5; Ex. 1012, Fig. 2. Paper 19, pp. 10-11.

The PTAB held in its Institution Decision that Petitioner had met its burden of showing anticipation of each claim element under the Dispositive Standard Test. Paper 9, p. 23.

PTAB's Dispositive Standard Test

PO offers no extrinsic evidence of a PHOSITA to rebut this PTAB holding and Petitioner's evidence. Instead, PO seeks to prevent substantive consideration of the issue by arguing procedural preclusion thereof. Paper 19, p. 11.

As will be fully appreciated *infra*, a procedural preclusion is improper under the facts of this case.

Upon considering the weight of the proffered evidence, Petitioner has clearly shown anticipation under the Dispositive Standard Test.

The anticipation/obviousness arguments
should be substantively considered

PRPOR, pp. 5-6, 8-9, 12-13

The anticipation/obviousness arguments should be considered

PO argues the genus/species issue constitutes an impermissible new argument. Paper 24, pp. 2-3.

This is incorrect. The Petition explicitly states that the “load” 20 of Mieth “includes” the claimed micro-controller. Paper 1, p. 25. The word “include” means “to take in or comprise as a part of a whole or group.” Merriam-Webster Dictionary. Thus, Petitioner asserted anticipation based on the disclosed load being a genus that includes a micro-controller as a species thereof. Therefore, this issue is not a new argument.

The anticipation/obviousness arguments should be considered

Even if the PTAB disagrees that the genus/species issue is not a new argument, PO's due process concerns are not violated under the *Anacor* doctrine. Paper 19, pp. 12-13.

The *Anacor* doctrine holds that additional arguments and evidence are permissible in instances such as this when the same legal issue of anticipation is based on the same prior art reference (Mieth) and the same inferences proposed in the Petition (whether a load includes a micro-controller). *Anacor Pharms., Inc. v. Iancou*, 889 F.3d 1372 (Fed. Cir. 2018).

The anticipation/obviousness arguments should be considered

The *Anacor* court further stated:

“[T]he introduction of new evidence during inter partes review trial proceedings is to be expected and, as long as the opposing party is given notice of the evidence and an opportunity to respond to it, the introduction of such evidence is perfectly permissible under the APA.”
889 F. 3d at 1380.

PO had opportunity to respond to the genus/species issue in its Sur-Reply, but instead chose to avoid it substantively and request the PTAB to reject it procedurally despite the *Anacor* doctrine. Paper 24.

The anticipation/obviousness arguments should be considered

The *Anacor* court also stated:

“[T]he petitioner in an inter partes review proceeding may introduce new evidence after the petition stage if the evidence is a legitimate reply to evidence introduced by the patent owner.” *Id.*

PO raised the issue of whether Mieth’s load anticipates the micro-controller in its POR after the Institution Decision indicated that the Petitioner had met its burden on that claim element. Paper 18, pp. 10-15. Petitioner responded with data to support the original assertion in the Petition (Paper 19, pp. 5-11), and PO had opportunity to address it in its Sur-Reply. Thus, the arguments and evidence are permissible under *Anacor*.

The anticipation/obviousness arguments should be considered

PO also argued that Petitioner's assertion that Mieth's load 20 was "analogous" to a micro-controller was an admission that the load did not anticipate the claim element. Paper 18, p. 13. If PO's statement is true, then the Petition's "analogous" statement constitutes an obviousness argument, and thus is not new.

According to PO, Mieth's load being "analogous" to a micro-controller means Petitioner is arguing that differences exist, but are sufficiently insubstantial to render the claim element obvious. The Merriam-Webster dictionary defines "analogous" as "similar or comparable to something else either in general or in some specific detail." Ex. 1024. Paper 19, pp. 12-13.

The anticipation/obviousness arguments should be considered

PO's argues against obviousness in its POR as evidenced by PO's Table of Contents, IV, A, stating, "Grounds A-D (Claims 1-20): Mieth does not disclose **or suggest** "a micro-controller." Paper 18, at i. PO clearly argues in its POR that Mieth's load 20 does not render the micro-controller element obvious.

PO raises the obviousness issue, then argues that Petitioner should be precluded from responding. Paper 24, p. 14. The rules clearly provide for response under such circumstances. (See 37 C.F.R. § 42.23(b) (stating a reply may respond to arguments raised in the corresponding patent owner response). Thus, Petitioner's arguments that the micro-controller element, if not anticipated, is rendered obvious by the load of Mieth are proper and must be considered.

Claims are obvious in view of Mieth alone and
Mieth-Balogh, respectively

POR, pp.23-24

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

The differences between Mieth's "load 20" and the claimed micro-controller are such that the subject matter as a whole is obvious to a PHOSITA. Paper 19, p. 12.

"Load" is a term of art in electronics and has a well-known meaning to a PHOSITA. Ex. 1023, ¶¶ 4-20, 48. A PHOSITA understands there are different kinds of loads, for example, resistive, capacitive, inductive, and combinations thereof. Paper 19, p. 13.

Further, loads may differ from one another in the useful work function they perform. Based on that intended work, loads may also have different requirements. For example, a resistive load (e.g., a resistive heater) may not need regulation in the supply of electrical energy thereto. *Id.* Other loads (e.g., digital circuitry), often have strict input voltage requirements to operate properly and avoid damage. *Id.* Ex. 1020, pp. 1, 31-32; Ex. 1021, p. 2.

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

One load that needs voltage regulation provided thereto is a micro-controller. Ex. 1021, p. 2. Micro-controllers have an input voltage requirement (e.g., 3.3V), and their data sheets specify a small supply voltage range be provided to ensure reliable operation. Ex. 1020, pp. 1, 31-32. Paper 19, p. 14.

Thus, based on whether the load environment employs voltage regulation to ensure a regulated supply of electrical energy thereto, a PHOSITA can readily anticipate the type of load being employed. Ex. 1023, ¶ 48. Paper 19, p. 14.

The '021 Patent and Mieth have the same load environment. They receive a fluctuating input voltage and employ voltage regulation to provide a regulated voltage to their respective loads. Paper 19, p. 16.

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

Mieth receives a fluctuating voltage from a solar generator 1, and provides the fluctuating DC voltage to a power converter 19 that outputs a regulated DC voltage (and thus a regulated DC supply of energy) to the load 20. Ex. 1002, 1:19-21; Ex. 1023, ¶ 49. Paper 19, p. 14.

Thus, a PHOSITA understands the load 20 requires a regulated DC supply of energy to perform properly (as providing regulation when unneeded undesirably increases circuit area, cost and complexity). *Id.* Micro-controllers and other low-voltage digital circuits such as a memory require a regulated DC supply voltage. *Id.*

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Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

Three exhibits of record show prior art with this same configuration; an unregulated DC source regulated by one or more converters, and then providing the regulated DC supply of electrical energy to a micro-controller operating as a load. Ex. 1023, ¶ 50. Paper 19, pp. 14-16.

These exhibits show the general knowledge of a PHOSITA, and are evidence of the insubstantial difference, if any, between Mieth and the '021 Patent with respect to the micro-controller limitation. The three exhibits are:

1. Ex. 1014 (Fig. 5),
2. Ex. 1012 (Fig. 2), and
3. Ex. 1022 (Fig. 2a)

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

1. Ex. 1014 (Fig. 5).

The PV array provides a fluctuating voltage to “BUCK” (i.e., regulator) that converts the unregulated voltage to a regulated output voltage. The regulated voltage is then provided to two different loads: (1) a battery, and (2) a micro-controller.

Paper 19, p. 15.

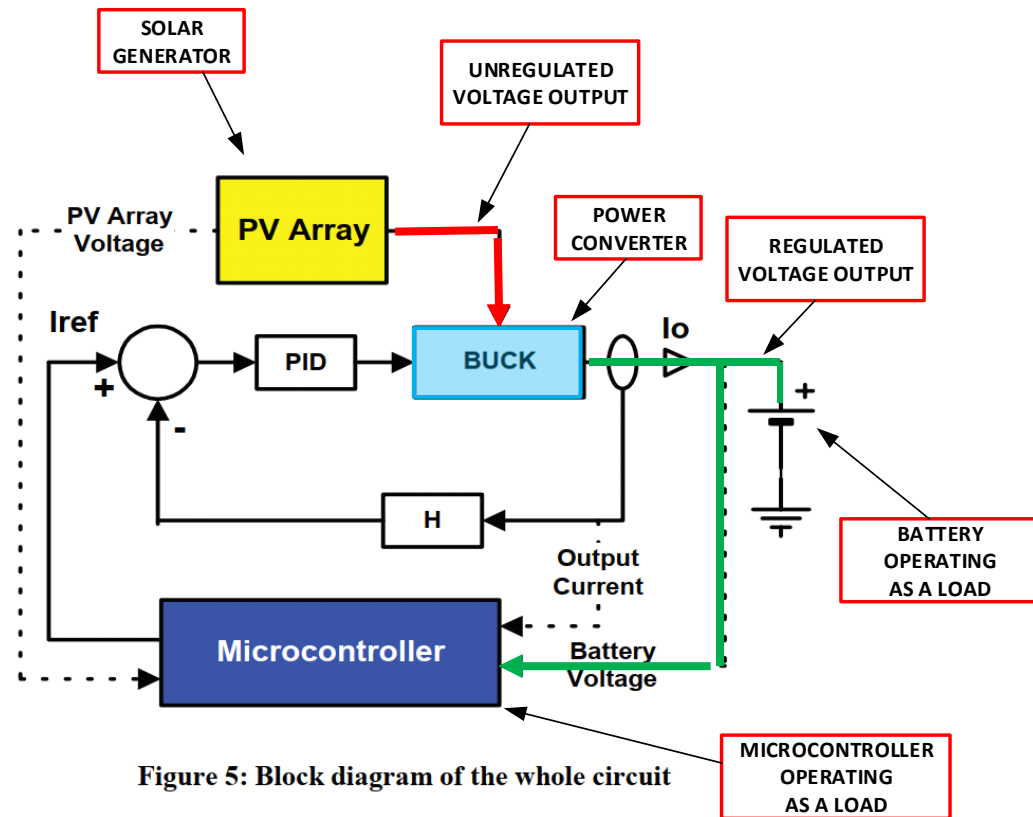


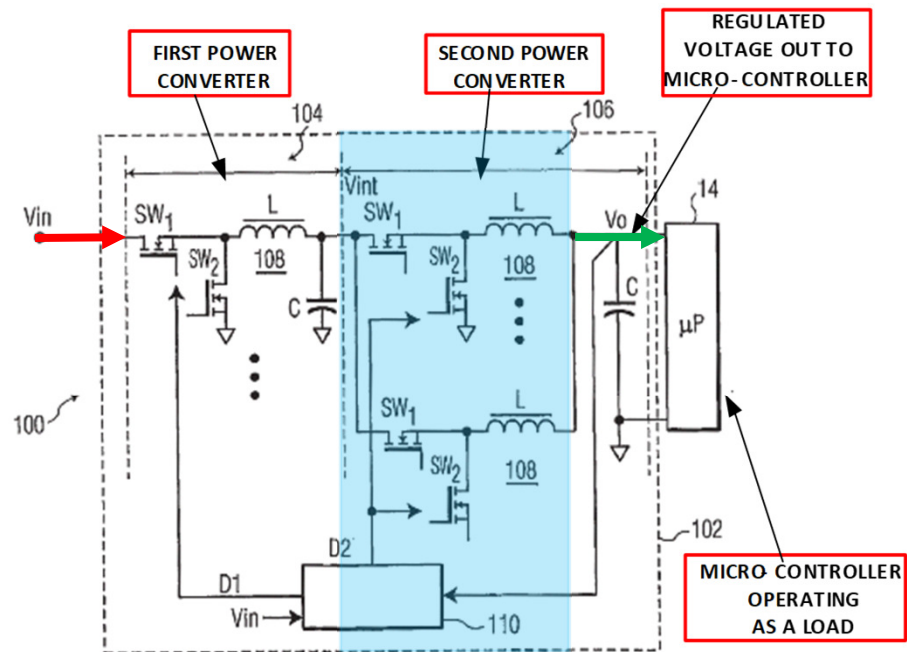
Figure 5: Block diagram of the whole circuit

Ex. 1014

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

2. Ex. 1012 (Fig. 2).

Fluctuating input voltage (V_{IN}) provided to power converters. The second converter 106 provides a regulated voltage (V_O) to its load 14, which is a micro-controller. Paper 19, p. 15.



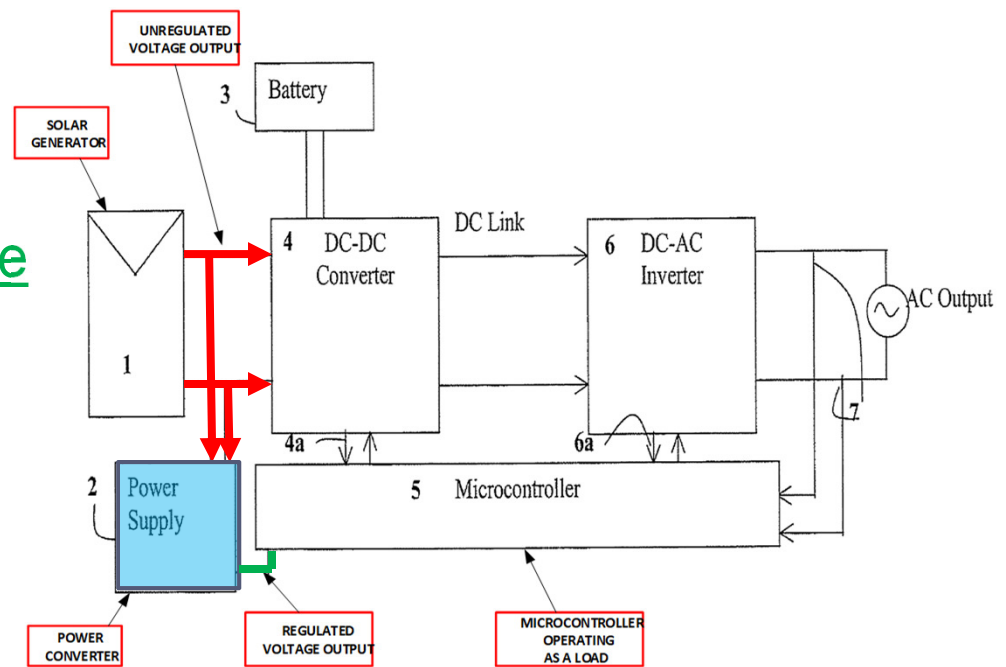
Ex. 1012

FIG. 2

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

3. Ex. 1022 (Fig. 2a)

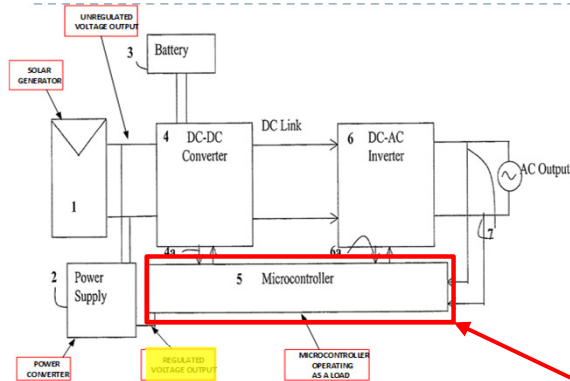
Solar generator 1 provides an unregulated voltage to power converter 2, which provides a regulated voltage to its load, which is a micro-controller 5.
Paper 19, p. 16.



Ex. 1022

Figure 2a

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively



Ex. 1022

Figure 2a

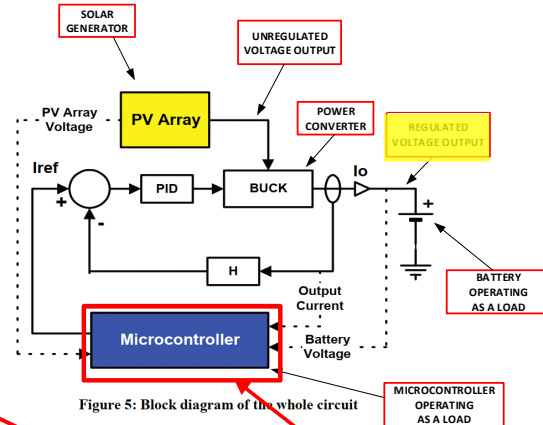
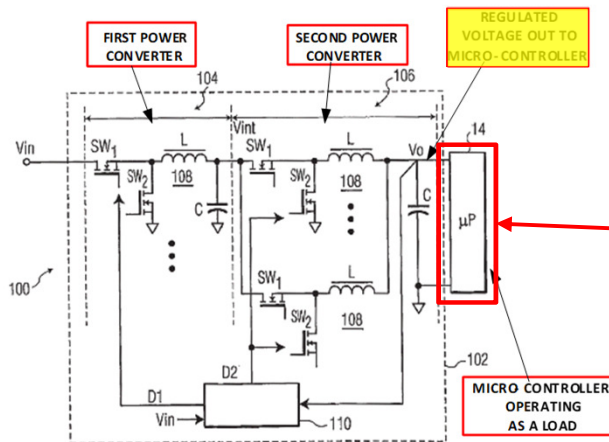


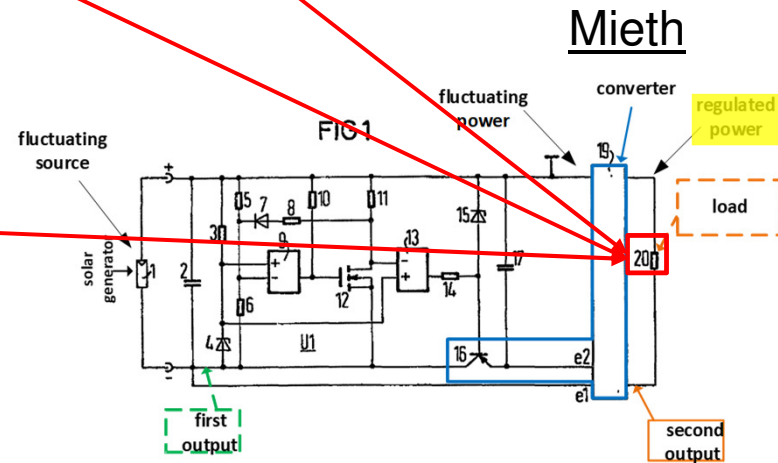
Figure 5: Block diagram of the whole circuit

Ex. 1014



Ex. 1012

FIG. 2



Mieth

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

A PHOSITA understands that Mieth's load 20 receives a regulated supply of DC electrical energy from converter 19, thus substantially reducing the pool of devices and circuits that may constitute a load in this circuit application. Paper 19, p. 16.

As shown in the exhibits, one type of load that satisfies these constraints is a micro-controller. Ex. 1023, ¶ 51; Ex. 1021, p. 2. Further, both the load 20 of Mieth and the micro-controller of the '021 patent are configured the same (as an output of a power converter receiving regulated DC electrical energy). Paper 19, pp. 16-17.

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

A PHOSITA knows the number of circuits (e.g., load and micro-controller, if not the same) that meet the circuit application requirements are finite in number, and can be substituted for one another without any circuit/system alterations. In such instances a PHOSITA has a reasonable expectation of success making the substitution. Paper 19, pp. 16-17.

In re ICON Health & Fitness, Inc., 496 F.3d 1374 (Fed. Cir. 2007)(holding obviousness when prior art discloses a device that differed from claimed element by a substitution of components when substituted components and their function was known in the art and substitution was predictable).

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

Exhibits 1012, 1014 and 1022 show a PHOSITA knows a micro-controller is a typical type of load that can be substituted into and replace whatever type of load is being employed by Mieth. Paper 19, p. 17.

A PHOSITA knows Mieth suggests load 20 requires a regulated supply of DC electrical energy, thus reducing the number of circuits that may constitute a load in this application to a limited, finite number of circuits. One of the few loads that satisfy these constraints is a micro-controller. Ex. 1023, ¶ 51; Ex. 1022, p. 2. Paper 19, p. 18.

As one of a limited number of predictable solutions for a load receiving a regulated supply of DC energy, it would be **obvious to try** a micro-controller in the system of Mieth, and thus the claimed micro-controller is obvious in view of Mieth. *Perfect Web Tech., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328-29 (Fed. Cir. 2009)(relying on *KSR* that claim feature is “obvious to try” when there is a finite number of identified predictable solutions). Ex. 1023, ¶ 51. Paper 19, p. 18.

Claims are obvious in view of Mieth alone and Mieth-Balogh, respectively

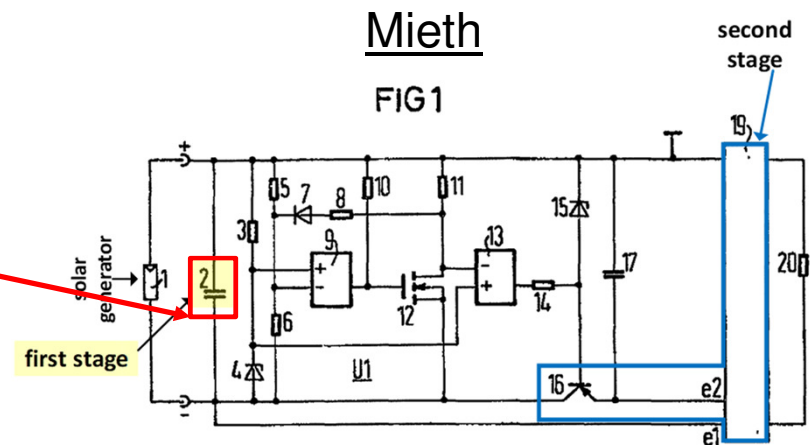
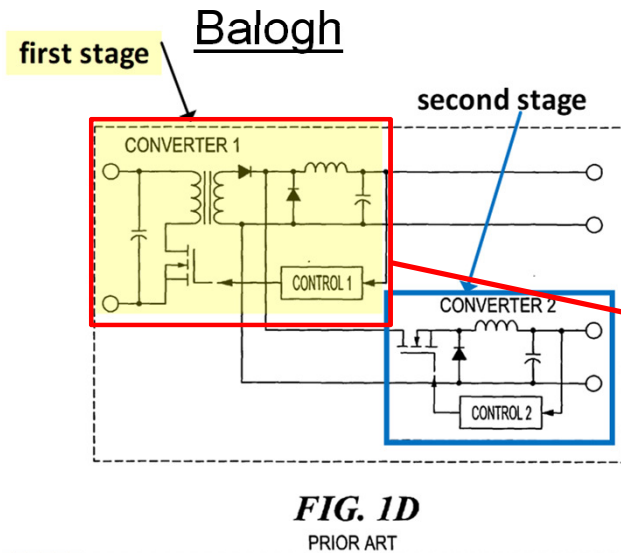
Any differences that might exist between Mieth's load 20 and the recited micro-controller (which the '021 patent repeatedly calls a load) are such that it would have been obvious to a PHOSITA. Thus Mieth alone, or a combination of Mieth and Balogh render obvious the various claims of the '021 patent under Grounds A and B. Paper 19, p. 18.

PO provides no extrinsic evidence to support its assertion that differences between Mieth's load and the '021 patent's micro-controller are substantial and thus non-obvious to a PHOSITA. PO's arguments are conclusory, have no evidentiary basis, and should be given no weight. Paper 19, p. 18.

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The combination of Mieth and Balogh is proper and renders obvious the claims of Ground B

In attacking the combination of Mieth and Balogh in Ground B, PO mischaracterizes the combination. Paper 18, pp. 33-35. The Petition does not seek to replace all the elements of Mieth in front of its power converter 19 with Balogh. Instead, the Petition asserts a PHOSITA would be motivated to replace Mieth's capacitor with the first stage power converter of Balogh. Paper 1, p. 51 (stating, "Balogh (Ex.1003) also discloses a first stage, and a PHOSITA would have been motivated to combine Mieth and Balogh.")



The combination of Mieth and Balogh is proper and renders obvious the claims of Ground B

PO argues the combination of Mieth and Balogh is improper as not supported by rationale underpinnings. Paper 18, pp. 39-41. This is incorrect.

The Petition explains the rationale for combining Mieth and Balogh, Paper 1, pp. 51-55, and cites extensively to the expert report which provides even greater detail. Ex. 1007, ¶¶ 151-160.

The Petition states Mieth converts an input PV voltage of as high as 36V. Paper 1, p. 52 (citing Ex. 1002, 12:21-26).

The combination of Mieth and Balogh is proper and renders obvious the claims of Ground B

The Petition notes that Balogh states cascading multiple converters is advantageous in applications having large voltage conversion ratios, and states in its example, an input voltage of 48V. *Id.*

The Petition cites to multiple data sheets that indicate PV modules (similar to Mieth's solar generator) can exhibit open-circuit voltages of 80V, even greater than Balogh. *Id.*

The Petition concludes that a "PHOSITA would have known to combine the cascaded power converter architecture of Balogh for high DC applications (e.g., 48V or 80V solar panel modules) to realize an appropriate intermediate voltage for the switchable load and load 20 of Mieth." *Id.* (citing to Ex.1007, ¶ 156).

The combination of Mieth and Balogh is proper and renders obvious the claims of Ground B

The expert report cites to Ex. 1012 as general knowledge of a PHOSITA, that indicates employing cascaded converters such as Balogh improves circuit efficiency. Ex. 1007, ¶ 153; Ex. 1012; ¶ 6. Thus, the Petition shows:

1. Mieth discloses a PV application with a converter,
2. Balogh teaches that cascaded converters are advantageous for large voltage conversion ratios,
3. Prior art data sheets of record show PV module voltages even higher than Balogh, and
4. Ex. 1012 (Xu) states that a cascaded converter architecture is advantageous as it improves circuit efficiency.

The combination of Mieth and Balogh is proper and renders obvious the claims of Ground B

Based on such evidence and the expert report, the Petition provides a detailed rationale that would motivate a PHOSITA to combine together the cited prior art.

More particularly, a PHOSITA is motivated to modify Mieth by substituting Mieth's capacitor 2 with the first converter of Balogh to provide a cascaded converter architecture.

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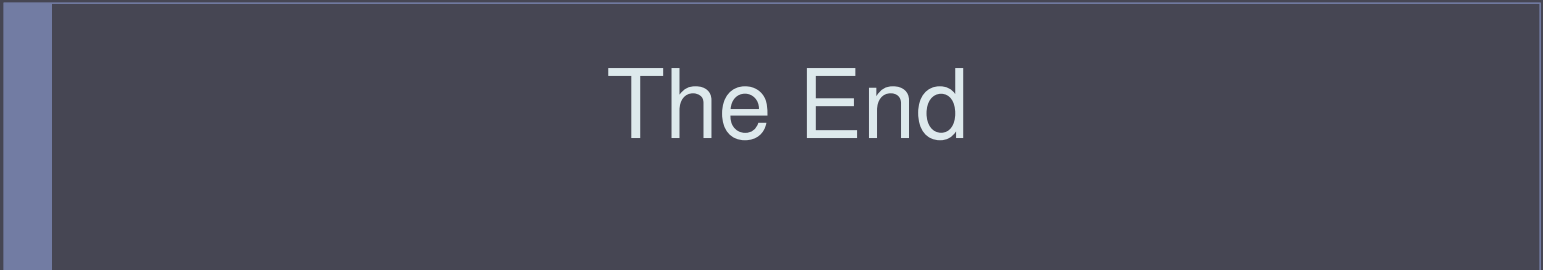
Conclusion

Conclusion

1. Mieth's disclosure anticipates the micro-controller of the '021 Patent under both the Zenith genus/species standard and under the PTAB's Dispositive Standard Test.
2. The genus/species argument was not a new argument, but instead was set forth in the Petition, and the PTAB held that Petitioner had shown a reasonable likelihood that each element of the claims was disclosed in the submitted art.
3. Even if the arguments submitted in Petitioner's Reply to POR are held to be new, the *Anacor* doctrine states that new arguments and evidence submitted in response to PO's POR arguments is proper.

Conclusion (cont.)

4. Mieth's disclosure alone renders the claims obvious as any difference between the disclosed load and the claimed micro-controller is insubstantial.
5. The combination of Mieth and Balogh is proper and renders obvious all the claims of Ground B.
6. PO seeks preclusion of any substantive analysis of the prior art of record under Sections 102 and 103, and has failed to buttress any of its arguments with extrinsic evidence. Such arguments are conclusory and should be given no weight.



The End