

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOPSOE, INC.,
Petitioner,

v.

CASALE SA,
Patent Owner.

Case No. IPR2025-01454

U.S. Patent No. 11,673,805

PETITIONER'S REPLY¹ IN SUPPORT OF PETITION

¹ Authorized by email dated January 2, 2026.

TABLE OF CONTENTS

I. The Petition Demonstrates Reasonable Likelihood of Success under Any
Plausible Reading of “Furnace”1

II. “Furnace” Should Be Given Its Plain and Ordinary Meaning3

III. Patent Owner Takes Conflicting Position in Litigation5

The Board should institute review on all grounds. Claim construction is unnecessary because the Petition demonstrates a reasonable likelihood of success under any plausible reading of “furnace.” Patent Owner fails to show the specification clearly redefines “furnace” to displace its ordinary meaning, and its recent infringement allegations use the term consistently with the Petition.

I. The Petition Demonstrates Reasonable Likelihood of Success under Any Plausible Reading of “Furnace”

Claim construction of “furnace” is unnecessary for institution. Claim terms are construed only when necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). No such necessity exists here, as the Petition identifies prior art disclosing such furnaces even under Patent Owner’s narrow construction. POPR at 11-12. The Board routinely proceeds without express construction in such cases. *See Eve Energy Co., Ltd. v. Varta Microbattery GMBH*, IPR2021-00474, Paper 30 at 13 (PTAB Aug. 8, 2022) (“We agree that no claim terms require express construction for purposes of resolving the dispute between the parties”) (citing *Vivid Techs.*); *Pascal Techs. v. Cambridge Enterprise Ltd.*, IPR2024-1235, Paper 8 at 9-10 (PTAB Mar. 24, 2025) (finding that no terms require construction) (citing *Vivid Techs.*).

The Petition shows that 2007 IFA discloses using CO₂-depleted syngas as fuel for **both** a gas turbine (“GT”) **and** a heat recovery steam generator (“HRSG”). Pet. at 17; EX1005 ¶¶ 92; EX1006 at 9. Patent Owner ignores the heat recovery

steam generator, discussing only the gas turbine to make its argument. POPR at 20.

And referring to another figure in *2007 IFA* in support of the Petition, Dr. Ritter also shows detail of the CO₂-depleted syngas (“fuel”) directly used for combustion in a steam generator, which Patent Owner also ignores. Pet. at 17, 20; EX1005 ¶¶ 93; EX1006 at 8. Either way *2007 IFA* clearly discloses a “furnace” under the plain and ordinary meaning and under Patent Owner’s narrow construction (i.e., as a steam generator).

The Petition also demonstrates that *Rytter* supplies fuel to ***at least*** one furnace under the Patent Owner’s definition. Pet. at 42 (citing EX1008 at 4:55-57 (“part of the H₂-containing stream from the separator for the H₂ and CO₂ reformer is supplied as fuel,” i.e. furnace as a “steam reformer”); 4:10-14 (“...the remaining part of the H₂-containing stream to one or more heat-generating station(s) or to other H₂-requiring processes,” i.e., furnace as a “charge preheater”); 6:8-13 (“The surplus of the hydrogen, which is separated in the separator 6, may be passed to a hydrogen power station 7, which is also supplied with air for the combustion of the hydrogen gas to steam..., ” i.e., furnace as a “steam generator”); cl. 11 (“part of the H₂-containing stream from the separator for H₂ and CO₂ is fed to the reforming plant as a fuel, ” i.e., furnace as a “steam reformer”)). As with *2007 IFA*, Patent Owner addresses only one of these furnaces, arguing that the “heat-generating stations” are “gas turbines” that do not fall within its narrow definition. POPR at

21. Patent Owner thus ignores *Rytter*'s express disclosure of supplying the CO₂-depleted syngas directly to a steam reformer and/or a steam generator as fuel.

Finally, while *Fjellhaug* describes a combined-cycle configuration in which a hydrogen-rich fraction is combusted for power, it also describes using the turbine's combustion heat to generate steam in a steam generator and steam superheater. EX1005 ¶ 208; EX1010, 4:38-50 ("Exhaust 26 from the turbine 24 is heat exchanged with water in a *steam generator* 27 and the *steam therefrom may be superheated* [i.e., steam superheater] in a heat exchanger 30 before steam 31 is supplied to a power generator 32 to which the steam 10 may be supplied.") (emphasis added). A skilled artisan would therefore understand to implement the disclosed fuel fraction in a "steam generator" or "steam superheater"—again, equipment Patent Owner's narrow construction names. Pet. at 54-55; EX1005 ¶¶ 110, 127, 149-50, 208; EX1010, 3:23-24, 3:59-4:3, 4:64-65.

In short, construing "furnace" is unnecessary because the Petition shows a reasonable likelihood of success under Petitioner's plain and ordinary meaning and under Patent Owner's narrow construction. The Petition should be instituted.

II. "Furnace" Should Be Given Its Plain and Ordinary Meaning

Patent Owner fails to overcome the heavy presumption that "furnace" carries its plain and ordinary meaning. *See, e.g., Synopsis, Inc. v. Mentor Graphics Corp.*, IPR2012-00041, Paper 14 at 5 (PTAB Feb. 22, 2013). It argues it acted as its own

lexicographer, defining “furnace” more narrowly than a POSA would understand. POPR at 11-12. However, “[t]he standards for finding lexicography and disavowal are exacting.” *Hill-Rom Servs. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning. *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). To disavow part of the plain and ordinary meaning, the patent must include a “clear and unmistakable disclaimer” that the invention does not include a particular feature. *Id.* at 1367.

The ’168 Patent specification provides no such clear definition or disclaimer. While it states a “furnace” is an apparatus “chosen from among: a steam reformer or a charge preheater or a steam generator or a steam superheater,” (EX1001, 2:47-49), it also explains a furnace is also “identified by the term ‘fired heater’ (*id.*, 2:50-51) and broadly describes “furnaces” functionally as operating “by means of combustion.” *Id.* The ’168 Patent further describes apparatuses that operate by means of combustion such as gas turbines for generating electricity (*id.* 7:44-53), which are well known in the prior art to include steam cogeneration. *See* Pet. at 17; EX1005 ¶¶ 92; EX1006 at 9.

Lexicography cannot be supported where references are not consistent and the intrinsic evidence does not support applying the limitation. *Cont’l Cirs. LLC v.*

Intel Corp., 915 F.3d 788, 798 (Fed. Cir. 2019). Here, the specification lacks the clear, consistent definition required to deviate from the plain and ordinary meaning. *See Bright Data Ltd. v. Code200, UAB*, 2025 WL 2180736, at *10 (Fed. Cir. Aug. 1, 2025) (explaining that even language that “signals lexicography” is not always definitional and how the language is used in the full context of the specification must be examined).

III. Patent Owner Takes Conflicting Position in Litigation

Patent Owner’s newly filed infringement allegation against Petitioner contradicts the narrow construction it advances here. In litigation, Patent Owner alleges that Petitioner’s process splits synthesis gas into streams, “with a first stream being provided to a fired heater (i.e., a furnace) as fuel and a second stream being a process gas to be used for ammonia synthesis.” EX1044 at 39 of 94 (¶ 66). It does not apply its narrow construction or map its infringement allegations onto “an apparatus chosen from among: a steam reformer or a charge preheater or a steam generator or a steam superheater” as it argues is required here. POPR at 11-12; EX2006 at ¶ 25. Instead, Patent Owner relies on the broader “fired heater,” consistent with the plain and ordinary meaning and the Petition.

Dated: January 7, 2026

Respectfully submitted,

/Jeffrey A. Andrews/

Jeffrey A. Andrews, Reg. No. 62,206

Yetter Coleman LLP

811 Main Street, Suite 4100

Houston, TX 77002

Telephone: (713) 632-8000

Facsimile: (713) 632-8002

Email: jandrews@yettercoleman.com

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that on this 7th day of January, 2026, a true and correct copy of the foregoing **PETITIONER’S REPLY IN SUPPORT OF PETITION** was served by electronic mail on Patent Owner’s lead and backup counsel at the following email addresses:

Case Collard
collard.case@dorsey.com

Brian Vanderwoude
vanderwoude.brian@dorsey.com

Payton George
george.payton@dorsey.com

/Jeffrey A. Andrews/
Jeffrey A. Andrews, Reg. No. 62,206