

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

General Electric Company,
Petitioner,

v.

United Technologies Corporation,
Patent Owner

Case IPR2016-01289
Patent 7,060,360 B2

PATENT OWNER'S SURREPLY BRIEF ON REMAND

GE's remand arguments confirm that its proposed combination cannot satisfy the Federal Circuit's construction of "bond layer." Many of GE's arguments conflict with the Federal Circuit's express construction and its holding that adherence is an "**additional**" requirement beyond the bond layer's location and composition. *United Techs. Corp. v. Gen. Elec. Co.*, 757 F. App'x 971, 973-74 (Fed. Cir. 2019) (original emphasis). For example, GE relies on the Examiner and Eaton to imply that Terentieva's protective coating is a "bond layer" either in the proposed combination or in Terentieva itself merely because it is an "intermediate layer." Paper 32 at 1-2. Similarly, GE argues that UTC "cannot now argue that certain compositions for the bond layer are within the scope of the claims and others are not, based on an adhesion quality lacking any quantitative scope." *Id.* at 4; *see also id.* at 5 (arguing that "bond layer" does not require "'improved' . . . adhesion" because "Terentieva's coating layer . . . falls within the composition of the claimed 'bond layer.'").

These arguments directly conflict with the Federal Circuit's holding. If every intermediate layer were a "bond layer," as GE implies, or if every composition within the scope of the claimed genus would work as a "bond layer," then there would be no additional requirement of adherence. But the Federal Circuit directly rejected GE's position, holding that "those additional requirements do not mean that the 'bond layer' does not **also** have to bond." *United Techs.*, 757 F. App'x at 974 (original emphasis). GE's continuing to advance these rejected arguments confirms

that GE cannot carry its burden under the Federal Circuit’s construction.

GE also tries to rewrite the Federal Circuit’s construction to require only “adherent properties.” Paper 32 at 1-2. Yet, the only “adherent properties” to which GE points relate to the protective coating’s ability “to adhere to the surface of the material to be protected,” *id.* (citing GE-1005, 4:30-33), not whether it is “designed to adhere *another layer* to a substrate,” as the Federal Circuit’s construction requires.

GE tries to elide this deficiency by invoking Terentieva’s optional outer layer. Paper 32 at 1-2. Yet, GE cites no evidence that the protective coating was “designed to adhere” this optional layer—which is used in *none* of Terentieva’s embodiments, GE-1005.004-006—to a substrate. Terentieva itself is silent about whether the protective coating plays a role in any adhesion between the optional layer and a substrate, and Dr. Clarke’s testimony that “Terentieva does not describe or suggest that the protective coating was designed to adhere another layer (e.g., the refractory layer) to the substrate” is un rebutted because GE opted to put forth no contrary expert testimony. UTC-2001, ¶¶ 92-93. That is dispositive because expert testimony is required to establish obviousness where the technology is beyond the grasp of a layperson, as it is here. *Alexsam, Inc. v. IDT Corp.*, 715 F.3d 1336, 1347-48 (Fed. Cir. 2013). GE relies entirely on the Examiner’s assumption that an intermediate layer is “considered to effectively function as a bond layer,” Paper 32 at 1 (citing Ex. 1002.032), but that reasoning is foreclosed by the Federal Circuit’s holding.

Further, even if Terentieva’s protective coating could work as a bond layer in some systems, GE cannot show that it would work in the relevant context—namely, in the combination asserted in GE’s petition (Terentieva’s protective coating directly between Eaton’s BSAS layer and a substrate). Pet., 23. Obviousness is evaluated “with respect to the subject matter as a whole, not separate pieces of the claim.” *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1086 (Fed. Cir. 2008). Whether the protective coating could work as a bond layer in another context is irrelevant.

GE’s only substantive attempt to show that Terentieva’s protective coating could work as a bond layer with Eaton’s BSAS is its argument—made for the first time in its reply remand brief—that “a POSITA would expect the CTEs of Terentieva’s coating layer and Eaton’s BSAS to be compatible.” Paper 32 at 3-4. The experts agree that compatible CTEs are necessary for a bond layer to work. UTC-2001, ¶ 46; UTC-2014, 48:5-49:4. Consistent with Eaton and the POSITA’s knowledge, the ’360 Patent explicitly identifies mismatched CTE as contributing to the loss of mechanical properties. GE-1001, 1:35-39 [cited in Paper 12 at 3].

However, GE’s evidence purporting to show compatible CTEs between Terentieva’s protective coating and Eaton’s BSAS is speculative and unsupported. GE first points to Dr. Glaeser’s testimony about “combinations of Si and MoSi₂,” *see* GE-1003, ¶ 57, but Dr. Glaeser never addressed the effects of Titanium—particularly TiSi₂, a significant component of the protective coating. *Id.*; GE-

1005.002 (2:57-67). GE's attorney argument cannot fill this gap not only because expert testimony is necessary to explain the impact of TiSi_2 , *see e.g. Alexsam*, 715 F.3d at 1347-48, but also because the evidence undercuts GE's attorneys' assertions.

GE argues that any combination of Mo, Ti and/or Si would have a similar CTE merely because Ti and MoSi_2 have similar CTEs in isolation. Paper 32 at 4-5 (citing GE-1016.007). That argument is specious. The evidence GE cites itself disproves this inference, showing that compositions with Mo, Ti, and/or Si can have vastly different CTEs (e.g., Ti_5Si_3 has a CTE of 3.05, which is far less than the 8.25 of MoSi_2). GE-1016.007. Indeed, GE's table shows no known value for the TiSi_2 contained in Terentieva because "?" is the entry next to TiSi_2 . *Id.* Furthermore, the undisputed evidence establishes that TiSi_2 's CTE is "significantly higher" than Si or MoSi_2 . UTC-2013, ¶ 16; UTC-2023 at 1204 & Fig. 10. Thus, GE's assertion that combining Ti with Si or MoSi_2 would yield a similar CTE is unsupported.

GE's other attempts to address Terentieva's Titanium are also flawed. First, that some Ti-containing compositions work as bond layers for BSAS does not mean that Terentieva's specific composition would. UTC-2013, ¶¶ 15-19. Second, that a composition's CTE can be "tuned . . . *to some extent*," GE-1031, 44:20-46:6 (emphasis added), does not suggest that CTE mismatch can always (or even usually) be overcome through modifications. Further, GE has not proposed how or why a POSITA would have tried to tune the CTE of Terentieva's protective coating. GE

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