

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

PETITIONER'S SUPPLEMENTAL BRIEF

Pursuant to the Board’s Order Granting Patent Owner’s Request for Supplemental Briefing (Paper No. 20), Petitioner hereby submits the following Supplemental Brief in Support of its Petition for *Inter Partes* Review of U.S. Patent No. 7,060,360 (“the 360 Patent”).

I. Petitioner’s Arguments Regarding *Idemitsu*

The Federal Circuit’s decision in *Idemitsu Kosan Co., Ltd. v. SFC Co. Ltd.*, 2017 U.S. App. LEXIS 17856, *12 (Fed. Cir. Sept. 15, 2017) confirms that Patent Owner’s arguments regarding features outside the scope of the claims should be rejected. Patent Owner has argued that addition of an outer environmental barrier layer would “hinder or eliminate” the healing function of the refractory metal disilicide/silicon eutectic bond layer disclosed in Terentieva. As explained by Petitioner, this argument is flawed. Patent Owner asserts that addition of a BSAS EBL/TBC would result in a lower temperature seen by the bond layer, but does so by incorrectly assuming the gas flow temperature would not be increased upon addition of the EBL/TBC. Patent Owner also disregards entirely that Terentieva already contemplates the addition of an outer barrier layer above the refractory metal disilicide/silicon eutectic bond layer. Moreover, while Patent Owner *argues* that the healing properties would be hindered or eliminated, its expert, Dr. Clarke, offered nothing more than an opinion that lower temperature means higher viscosity. GE-1031 at 49:21-50:8. Indeed, Dr. Clarke was unwilling and unable to

articulate a point at which the healing function would be hindered, let alone eliminated. *Id.* Nonetheless, even assuming that at the lower temperature example discussed by Dr. Clarke (e.g., 1300 °F) the healing properties would be “hindered” because of higher viscosity, *Idemitsu* confirms that such an argument fails as it neither “relate[s] to [nor is] commensurate in scope with the ultimate claims” of the 360 patent. 2017 U.S. App. LEXIS 17856, at *12.

In *Idemitsu*, there was no dispute that the prior art disclosed the claimed limitations of the patent in question. *Id.* at *5-6. Instead, the patent owner argued “at least implicitly—that [the prior art] teaches away from non-energy gap combinations.” *Id.* at *10-11. More specifically, the issue was whether the Board erred in combining the particular prior art compounds in view of the requirement *in the prior art* that the “HT compound and the ET compound must be selected so that the energy gap of the HT compound is smaller than the energy gap of the ET compound.” *Id.* at *6. The Board’s decision noted that the claims of the patent under review did “not include any limitations directed to the energy gap characteristics of the individual components or particular performance characteristics of the light emitting layer.” *Id.* at *8. The Board further explained that “[t]he sufficiency of [the prior art] disclosure to establish the obviousness of the combination *does not depend on whether the resulting light emitting layer*

would satisfy [the prior art's] energy gap relationship or the desired stability and heat resistance criteria.” *Id.* (emphasis in original).

The Federal Circuit affirmed the Board’s decision explaining that “[e]vidence concerning whether the prior art teaches away from a given invention must relate to and be commensurate in scope with the ultimate claims at issue.” *Id.* at *12. The Court further noted that “the claims at issue do not include limitations with respect to half-life or efficiency” and therefore, “poor performance under those criteria...is of substantially reduced importance here.” *Id.* at *12-13. The Federal Circuit held that “the Board reasonably concluded that [the prior art] teaches that a light-producing device can be made—regardless of comparative shortcomings in durability or resistance caused by imperfect energy gap ratio...” *Id.* at *14.

The facts of the present case are analogous to *Idemitsu*. There is no dispute that the prior art—Terentieva and Eaton 456—discloses the claimed silicon substrate, refractory metal disilicide/silicon eutectic bond layer, and BSAS environmental barrier layer. There is also undisputed motivation to add the Eaton 456 environmental barrier layer to the Terentieva article (i.e., the addition of a BSAS environmental barrier layer is *necessary* to protect the silica scale from attack in a water vapor environment). Petition at 23-25. The issue, raised by Patent Owner, is whether a POSITA would have understood that the disclosed

healing function in Terentieva discourages or teaches away from the proposed combination. The claims of the 360 Patent, however, include no limitations regarding the temperature at which the claimed article will be exposed, the viscosity of the layers within the claimed article, or any healing properties. GE-1001 at 2:56-4:17. Thus, any purported shortcoming resulting from high viscosity at low temperatures is of “questionable relevance” and “substantially reduced importance” given the scope of the 360 claims. *Idemitsu*, 2017 U.S. App. LEXIS 17856, at *12.

II. Petitioner’s Arguments Regarding *Southwire*

The Federal Circuit’s decision in *Southwire Co. v. Cerro Wire LLC*, 2017 U.S. App. LEXIS 17374 (Fed. Cir. Sept. 8, 2017) confirms that the fracture toughness limitation ($> 1 \text{ MPa}\cdot\text{m}^{1/2}$) of dependent claims 6, 8 and 10 is obvious and that Patent Owner’s argument regarding inherency is irrelevant. In *Southwire*, the Federal Circuit found that while the Board had “improperly invoked inherency” as to a functional claim limitation regarding pulling force, “[i]t made the necessary underlying factual findings to support an obviousness determination.” *Id.* at *10. Specifically, the Board found that “[n]one of the patented steps differs in any material way from the process disclosed in [the prior art],” and further, that “there is no evidence that the claimed 30% reduction in pulling force would have been

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