

Federal Circuit Review – Issue 294

WRITTEN BY

Joseph R. Robinson | Robert Schaffer | Dustin B. Weeks | Brandon Reed

294-1. Federal Circuit Finds a 1987 NASA Article Describing “Futuristic” Technologies to Be a Non-Enabling Prior Art Reference

The Federal Circuit recently reversed a Patent Trial and Appeal Board (Board) decision, finding a sole section 103 reference to be non-self-enabling. In so holding, the Court found that Raytheon’s turbine engine design could not be rendered obvious by the reference. See [Raytheon Techs. Corp. v. GE, No. 2020-1755, 2021 U.S. App. LEXIS 10961 \(Fed. Cir. Apr. 16, 2021\)](#) (Before Lourie, Chen, and Hughes, *Circuit Judges*) (Opinion for the Court, Chen, *Circuit Judge*).

Raytheon Technologies Corporation (Raytheon) is the owner of U.S. Patent No. 9,695,751 (‘751 patent), which is directed to gas turbine engines for airplanes. General Electric Company (GE) petition the Board for *inter partes* review (IPR) of certain claims of the ‘751 patent. Of particular interest in the IPR was a limitation in Claim 1 that recites:

1. A gas turbine engine comprising:

...

a power density at Sea Level Takeoff greater than or equal to 1.5 lbf/in³ and less than or equal to 5.5 lbf/in³ and defined as thrust in lbf measured by a volume of the turbine section in in³ measured between an inlet of a first turbine vane in said second turbine to an exit of a last rotating airfoil stage in said fan drive turbine.

To invalidate the claims of the patent, GE relied upon a reference, Knip, as either the sole reference or as a primary reference in view of another secondary reference. The Knip reference was a 1987 NASA article that “envision[s] superior performance characteristics for an imagined ‘advanced [turbofan] engine’ ‘incorporating all composite materials.’” The reference predicted the use of these composite materials could reduce engine volume and weight, and provided certain parameters for the “futuristic engine.” However, the article did not describe what those composite materials were nor did it describe Sea Level Takeoff (SLTO), volume, or power density.

Raytheon argued in the IPR that the Knip disclosure did not “enable a skilled artisan to make the claimed invention,” and thus it was not a proper sole prior art reference. GE did not dispute that the materials in 1987 were not available, but argued instead that the only question was whether a skilled artisan could make and use the patented turbine engine *without undue experimentation*. The Board agreed with GE, finding Knip enabling “because it provided enough information to allow a skilled artisan to ‘determine a power density as defined in claim 1, and within the range proscribed in claim 1.’” The Board then found the claims of the ‘751 patent to be

obvious in view of Knip, and Raytheon appealed.

The Court noted that a petitioner must provide supporting evidence that a prior art reference is enabling. If only a single reference is asserted, the sections of that reference being used in the § 103 analysis must be self-enabling. The Court held that the Board's sole focus on "undue experimentation" here was error, since the Board never addressed whether Knip enables Claim 1.

Perhaps most importantly, GE failed to provide any additional evidence that a skilled artisan could make the claimed invention with the recited power density. Raytheon, on the other hand, "presented extensive, un rebutted evidence of non-enablement."

The Court then held that the Knip reference was non-enabling and, accordingly, reversed the Board's decision finding the asserted claims to be obvious.

"To render a claim obvious, the prior art, taken as a whole, must enable a skilled artisan to make and use the claimed invention." When a single reference is being used to invalidate a claim, evidence supporting non-enablement must be met with evidence supporting enablement, and a blanket "without undue experimentation" argument will likely not be enough.

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