

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JTEKT CORPORATION

Petitioner,

v.

GKN AUTOMOTIVE LTD.

Patent Owner.

Case IPR2016-00046

U.S. Patent No. 8,215,440

**PETITIONER'S REPLY TO PATENT OWNER RESPONSE IN
SUPPORT OF PETITION FOR *INTER PARTES* REVIEW**

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I. INTRODUCTION

The Board should cancel claims 2–3 and 6–7 of the ’440 patent. Teraoka anticipates claim 1, a fact conceded by GKN through their disclaimer of claims 1, 4, and 5. (Ex. 2016.) And, every element of claims 2–3 and 6–7 is also disclosed in the prior art, a fact not disputed by GKN in its Patent Owner Response (“POR”), and confirmed by their expert in his deposition. A skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention and would have had a reasonable expectation of successfully doing so. At best, GKN’s claims simply combine known art features for their known purposes to give only results that the art fully teaches, rendering the claims obvious.

GKN primarily argues lack of motivation to combine in the POR, but JTEKT has thoroughly refuted these arguments in both its Petition and this Reply. Overall, a *prima facie* case of obviousness for claims 2–3 and 6–7 has been established by a preponderance of the evidence—not only with the presence of each claimed element in the prior art references, but also with articulated reasoning with rational underpinning—and these claims should be found unpatentable.

II. CLAIMS 2 AND 3 WOULD HAVE BEEN OBVIOUS OVER TERAOKA IN VIEW OF WATANABE

Claims 2 and 3 specify that each side shaft has a side shaft coupling and that there is no differential gearing used to achieve transverse compensation and longitudinal compensation, respectively. (Ex. 1001, claims 2 and 3.) There is no dispute that all features of claims 2 and 3 are present in the combined disclosures of Teraoka and Watanabe. GKN's POR does not identify anything missing from the combination. (*See* POR.) And, GKN's expert did not identify any element of claims 2 and 3 as missing from the combination. (*See* Ex. 2017.) In fact, Dr. Stein testified that each element of claims 2–3 was known in the art prior to the '440 patent. (Ex. 1012, 61:9–18 (side shaft couplings for each side shaft known in the art), 62:3–19 (transverse equalization without a differential known in the art), 64:2–15 (longitudinal equalization without a differential known in the art).)

As noted in the Petition, Teraoka does not disclose side shaft couplings for ***each*** side shaft of the secondary axle. But, it would have been obvious for a POSITA to replace the clutch 71 and differential 25 of Teraoka with a side-shaft coupling on each side of the secondary axle

without differential gearing in between as taught by Watanabe for numerous reasons, including explicit teachings in the prior art.

A. Reducing the Weight of a System Would Have Motivated a POSITA to Combine Teraoka and Watanabe

First, as argued in the Petition, a POSITA would have been motivated to try to reduce the weight of a drivetrain system by eliminating the bevel gear differential and replacing it with Watanabe's multi-clutch system. (Ex. 1005, ¶ 45.) GKN (POR at 29) attempts to argue that eliminating the differential was not a recognized goal while purposely missing the point: the goal would be eliminating the *weight* of the differential. Regardless, the Board correctly apprehended JTEKT's argument (Decision at 24 referring to "eliminating the weight of a rear differential"), as did GKN's expert (Ex. 2017, ¶ 89 (referring to "reduc[ing] weight by substituting a clutch assembly for the differential")). Attempting to reduce the weight of a drivetrain would have motivated a POSITA to incorporate Watanabe's multi-clutch system into Teraoka's drivetrain as argued in JTEKT's Petition.

GKN erroneously asserts that this argument is not supported by factual evidence. But, it was supported by JTEKT's Declarant in both

his declaration and deposition. (Ex. 1005, ¶ 45; Ex. 2020, 94:4–9 (weight and cost drive design process), 110–111 (solving problems such as cost and weight), 136–137 (replacing geared system with clutch system could reduce weight and complexity), 140–141 (eliminating differential gearing affects control scheme factors such as cost and weight), 175:14–22 (one may want to eliminate bevel gear differential for weight savings).) Moreover, reducing weight and cost are recognized and implicit goals in virtually all manufacturing.

Regardless, there is additional proof that reducing component weight was a well-known goal in the automotive industry. Teraoka explicitly notes this benefit, stating that using clutch mechanism 71 “has a simpler configuration and reduce[s] number of parts, weight and cost as compared to prior art.” (Ex. 1002, ¶ [0089]; Ex. 1008, ¶ 7.) Watanabe also teaches that certain modifications offer benefits of “simplification of the mechanism, lighter weight, and lower costs.” (Ex. 1003, 4, lower right column; Ex. 1008, ¶ 8.) And, Watanabe states that using rear differential 11 (the multi-plate clutch module) means that no center differential is needed, “making it possible to simplify the vehicle’s power transmission system, and reduce cost and weight, which

are significant effects.” (Ex. 1003, 5, lower right column; Ex. 1008, ¶ 9.) Based on the specific teachings in Watanabe, it would have been predictable to a POSITA that replacing a bevel gear differential with a multi-plate clutch system could reduce weight of the system overall, and that this was a desirable goal. (Ex. 1008, ¶ 9.)

GKN’s own references and expert also support the notion that reducing weight of an automotive system is a well-known industry goal. (*See, e.g.*, Ex. 2007 at 2 (“Meritor’s new SmarTandem axle...is designed to reduce weight by 30 percent”); Ex. 2019 at 636 (“main disadvantages are the extra complexity and weight...”); Ex. 1012, Stein Deposition, 77:14–18 (reducing the number of parts, weight, and costs are common goals in the automotive industry).) Thus, ample factual evidence supports JTEKT’s argument that a POSITA would have been motivated to attempt to reduce the weight of a drivetrain system, and replacing a bevel gear differential with a multi-plate clutch system was a reasonable way to do so as suggested by Watanabe itself.

GKN also attempts to argue (POR at 31–32) that this “reduced-weight” reasoning is flawed because one of GKN’s commercial embodiments of a multi-plate clutch differential system weighs slightly

more than the bevel gear system it replaced. This is irrelevant to the obviousness analysis as it is ***but one embodiment*** within the scope of the claims. As noted by Mr. Becker, some embodiments may cause a weight reduction while some may cause a weight increase (as in GKN's commercial embodiment), depending on the implementation. (Ex. 2020, 136:21–137:10; *see also* Ex. 1008, ¶ 10.) And, GKN's expert Dr. Stein testified that he did not know if the clutch system in the Twinstar actually caused the small weight increase—and thus it could be a different component altogether, mooted GKN's argument. (Ex. 1012, 116:11–15.) As such, GKN has not refuted JTEKT's position that attempting to reduce the weight of a drivetrain system would have motivated a POSITA to incorporate Watanabe's multi-clutch system into Teraoka's drivetrain.

B. Providing A Larger Shutdown Section Would Have Motivated a POSITA to Combine Teraoka and Watanabe

Even if there was a small weight gain associated with using the clutch system in GKN's particular embodiment, combining Watanabe with Teraoka offers additional benefits that a POSITA may have considered justifiable, providing additional motivation to combine these

references. (Ex. 1012, Stein Deposition, 94:12–17 (there are circumstances where you may trade off a weight increase for additional performance).)

As recognized by GKN, the main goal of Teraoka is to reduce drag torque of the 4WD components when uncoupled. (*See, e.g.*, Ex. 1002, [0021]; POR at 41.) GKN suggests that a POSITA would not have looked to Watanabe for the purpose of reducing drag torque because Watanabe is primarily directed to improving lubrication. (POR at 41–42.) This position is legally and factually incorrect.

First, references need not be directed to the same problem to be solved in order to be combined by a POSITA. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007) (concluding that it was error to “look only to the problem the patentee was trying to solve” and that “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed”). This was directly tied to the second error, assuming that a POSITA “will be led only to those elements of prior art designed to solve the same problem.” *Id.* In other words, prior art does not have to be directed to the same problem in

order to be combined. *See also Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005) (“[POSITA] need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.”)

But in any event, GKN is wrong about Watanabe’s disclosure—Watanabe and Teraoka ***do*** provide teachings relevant to the same problem to be solved. Watanabe clearly states that its invention is particularly suitable for solving the problem of Teraoka:

If a 2-4 switching mechanism is provided and 2WD mode is switched to, releasing the multiple plate clutches 89 and 91 ***causes rotation of the drive system for the rear wheels 25 and 27 to stop***. Accordingly, useless rotation and the wear, vibration, and noise caused thereby can be prevented, as can a concomitant fall in mileage.

(Ex. 1003, 5, lower left column, emphasis added.) Watanabe teaches that its multi-plate clutch system has benefits in reducing driveline drag/energy loss, and a POSITA looking to solve the problem of Teraoka would have been motivated to employ Watanabe’s system in order to shut down additional components in the drivetrain. (Ex. 1008, ¶¶ 12–15; Ex. 1012, Stein Deposition, 88:19–90:11 (testifying that Teraoka’s

reduction in drag torque is a reduction in energy loss, Watanabe teaches stopping rotation of the center driveline, and stopping rotation of the central driveline reduces energy losses).)

Based on these specific teachings in Watanabe, it would have been predictable to a POSITA that using a multi-plate clutch system would stop rotation of some components, leading to reduced drag and wear and improving fuel efficiency. (Ex. 1008, ¶ 16.) Accordingly, a POSITA looking to solve the problem of Teraoka would have been motivated to use Watanabe. And, a POSITA would have had a reasonable expectation of successfully combining these systems. GKN's expert Dr. Stein testified that nothing would prevent a designer from implementing a clutch-based differential in an AWD product (Ex. 1012, 90:19-93:7 ("...it can be successfully implemented") and that an engineer knowledgeable about drivetrain design and control (*i.e.*, a POSITA) could combine Teraoka and Watanabe to result in a system where Teraoka's vehicle had Watanabe's rear-end device (Ex. 1012, 109:2-110:5).

**C. Improving Control and Providing Torque Vectoring
Would Have Motivated a POSITA to Combine Teraoka
and Watanabe**

GKN too-narrowly characterizes the problem to be solved in Watanabe as improving lubrication (POR at 42) in an attempt to undervalue the benefits that would have been recognized by a POSITA. Read fairly, Watanabe discusses numerous advantages associated with its multi-plate clutch system that would have motivated a POSITA to use these multi-plate clutches in any AWD system. For example, Watanabe states that steering can be easier. (Ex. 1003, 5, top left column.) Furthermore, “[i]f the steering characteristics are controlled in this manner, the ease of driving and stability of the vehicle can be improved.” (*Id.*, top right column.) These benefits would have encouraged a POSITA to apply Watanabe’s teachings to AWD vehicles to achieve the benefits associated with torque vectoring. (Ex. 1008, ¶ 17.) As noted by GKN’s own exhibit, “torque vectoring and torque management devices...have been gaining a bigger interest in the industry for recent years.” (Ex. 2012, 3, top left column.) Torque vectoring was first applied to AWD vehicles in 1996. (Ex. 1009, 3, bottom left column; Ex. 1008, ¶ 18; Ex. 1012, Stein Deposition, 98:2–

99:1 (torque vectoring in a vehicle was known in the art as a desirable concept since before the date of the '440 patent.) Torque vectoring provides “more nuanced vehicle control” that can influence vehicle dynamics and “improve the feeling of the car when you’re going straight or turning.” (Ex. 2028, 1.)

The benefits associated with torque vectoring would have encouraged a POSITA to apply Watanabe’s teachings to AWD vehicles. (Ex. 1008, ¶ 18; Ex. 1012, Stein Deposition, 96:7–98:17 (torque vectoring capability is desirable in some instances).) In fact, GKN’s own exhibit, Ex. 2005, shows a multi-clutch system similar to Watanabe was used in a commercial embodiment well before the '440 patent, supporting the assertion that those skilled in the art would have been motivated to combine Teraoka and Watanabe. (Ex. 1008, ¶ 19.) And, the effects of achieving torque vectoring with a multi-plate clutch system would have been predictable to a POSITA, as these benefits had been achieved in the art since 1996. (Ex. 1008, ¶¶ 18–19; *see also* Ex. 2005, Ex. 1009.)

D. A POSITA Could Combine Teraoka and Watanabe Under the “Obvious to Try” Rationale

Even assuming there was no motivation in the prior art to combine Teraoka and Watanabe, choosing from a finite number of identified, predictable solutions with a reasonable expectation of success can support a finding of obviousness. *KSR*, 550 U.S. at 421. In this case, GKN itself has established that there are a finite number of power dividing units (“PDUs”) a POSITA could have chosen from in designing a drivetrain. (Ex. 2017, ¶¶ 98–99; Ex. 2036, Table at 17.)

Although GKN suggests that this finite number of PDUs is too large to support selecting a multi-plate clutch taught by Watanabe (POR at 32) as an “obvious to try” alternative, the number of potential PDUs a POSITA would actually have been choosing from is substantially smaller because of the design process. As pointed out by Petitioner’s expert, a POSITA would have chosen a potential PDU based on predetermined factors such as desired performance:

Q: If you've got such a large number of potential combinations, how does a driveline designer determine what is optimal, an optimal driveline design?

A. They don't.

Q. So then how do they go about driveline design?

A. That's going to be defined by marketing and the vehicle concept group. In other words, they're going to want the vehicle to do something.

Q. Okay.

A. They're going to want the vehicle to be, as they call them, fun and sporty, which means cheap. So you're not going to put a really complicated driveline system on that vehicle. You're going to put as much safety as you can into that, you know, just as you would for any other vehicle, but the driveline control schema is not going to be as complex as a top-end, higher priced, more cost involved in the driveline system vehicle.

(Ex. 2020, 89:19–90:17; *see also* 116:22–117:9.) GKN’s expert agrees, stating “[t]he main objective for the design of a driveline system is to optimally distribute the power to the wheels in order to achieve the desired performance that the particular vehicle’s manufacturer is seeking.” (Ex. 2017 at ¶ 33, *see also* ¶ 93 (drivelines are “tailored and designed in order to achieve the desired vehicle performance”), ¶ 136 (“the desired vehicular operational performance factors dictate the design”); *see also* Ex. 1012, Stein Deposition, 46:9–47:7 (different sets of manufacturing specifications would move you to different driveline components.) As such, a POSITA could certainly have chosen a

Watanabe system if the marketing team desired a vehicle with reduced drag, because Watanabe specifically says that its clutches can achieve that effect and it was a recognized problem in the art, as shown in Teraoka. (Ex. 1003, 5, lower left column; Ex. 1002, ¶ [0011].) A POSITA could have pursued this solution with a reasonable expectation of success because multi-plate clutches similar to Watanabe’s had been used in commercial vehicles. (Ex. 2005; Ex. 1008, ¶ 19.) Thus, using multi-plate clutches would simply have led to the anticipated success, and must be considered obvious. *KSR*, 550 U.S. at 421.

E. GKN’s Remaining Arguments Fail

GKN argues (POR at 33–34) that JTEKT did not clearly explain what components in Watanabe would be incorporated into Teraoka, but this studiously ignores the claim charts in the Petition and declaration setting out the combination in detail. The Board correctly understood the combination, and this argument can be dismissed. (Decision at 23; *see also* Ex. 1005, ¶ 47 claim chart.)

GKN’s argument (POR at 34) that the combination of Teraoka and Watanabe would fail without sensors, controllers, and algorithms falls equally flat. A POSITA, particularly decades after the “mechatronics

revolution,” would have understood that all clutch pack on-demand systems would need controller elements to be functional. (Ex. 1008, ¶ 20; *see also* Ex. 1012, Stein Deposition, 47:9–18 (POSITAs have been using computers, sensors, and actuators for decades), 98:20–99:11 (the ’440 patent can be practiced even without disclosure of controllers, sensors, etc.).) And, including controller elements would have been well within the skill set of a POSITA and simply part of the routine optimization process. (Ex. 1008, ¶ 20; *see also* Ex. 1012, Stein Deposition, 106:3–9 (“Q: Isn’t that within the skill level of one skilled in the art to implement those additional features? A: Well, maybe so...”).)

Finally, GKN asserts without support (POR at 43–44) that the combination of Teraoka and Watanabe would be “inoperable” for Teraoka’s intended purpose of reducing drag loss and fuel efficiency and thus these references cannot be combined for an obviousness rejection. Simply stating that Teraoka would be rendered “inoperable” is insufficient, and GKN provides no basis for its position other than speculating that the dual clutch system could reduce fuel efficiency.

In any event, this argument too-narrowly defines Teraoka’s principle of operation. Teraoka’s principle of operation allows for

selective 2WD and 4WD operation while reducing drag in 2WD mode, and, as modified, would still operate under this principle. (Ex. 1008, ¶ 21.) And, Watanabe specifically states that its multi-plate system can be used to stop rotation of the drive system when in 2WD mode, indicating that Teraoka's principle of operation would still be satisfied. In fact, Dr. Stein confirmed that he was not opining no whether or not the device would still function as a drivetrain. (Ex. 1012, 114:5–9.) As such, GKN's citation to *In re Gordon* is misplaced. 733 F.2d 900, 902 (Fed. Cir. 1984).

III. CLAIMS 6 AND 7 WOULD HAVE BEEN OBVIOUS OVER TERAOKA IN VIEW OF BURROWS

Claim 6 specifies that the switch-on mechanism includes speed synchronization, and claim 7 says that at least one side shaft coupling is formed by a frictionally engaged multiple disc clutch. (Ex. 1001, claims 6 and 7.) There is no dispute that all features of claims 6 and 7 are present in the combined disclosures of Teraoka and Burrows. GKN's POR does not identify anything missing from the combined prior art references. (*See* POR.) And, GKN's expert did not identify any element of claims 6 and 7 as missing from the combination of Teraoka and Burrows. (*See* Ex. 2017.) In fact, Dr. Stein agreed that each

element of claims 6 and 7 was known in the art prior to the '440 patent. (Ex. 1012, Stein Deposition, 57:22–58:9 and 66:10–19 (speed synchronizers known in the art), 73:5–75:13 (frictionally engaged multiple plate disc clutches known in the art).) Indeed, no arguments are made regarding claim 7 at all. (*See* POR and Ex. 2017.)

As noted in the Petition, Teraoka does not explicitly disclose speed synchronization. But, it would have been obvious for a POSITA to use the synchronization mechanism taught by Burrows based on explicit teachings in the prior art and in the patent itself. (Ex. 1001, 4:17–23 (acknowledging speed synchronizers known in the art).)

A. Providing A Shutdown Section Would Have Motivated a POSITA to Combine Teraoka and Burrows

GKN characterizes Burrows (POR at 49) as directed to reducing acceleration jerk during transition to 4WD. This description ignores the underlying premise discussed at the beginning of Burrows, explaining that some 4WD vehicles can have a 2WD mode, and “[d]uring two wheel drive conditions, the driveline components connected to the rear wheels may be caused to rotate due to frictional drag between the components in the driveline...a major contributor to fuel inefficiencies and ways have been sought to minimize the residual drag...” (Ex. 1004, 5.)

Burrows explains that methods known in the art to disconnect and reconnect the main shaft require switching when the vehicle is stationary, and improved methods of connection while the vehicle is driven are required. (*Id.*) In other words, Burrows discusses precisely the same issue as Teraoka: reducing driveline drag in a 4WD vehicle when in 2WD mode, and is focused on improving a particular aspect of this situation. (Ex. 1008, ¶ 28.) As such, a POSITA looking to solve the problem of reducing drag of a 4WD system while in 2WD mode would look to Burrows, because Burrows discusses drag and teaches a system that allows connection while the vehicle is in motion without acceleration jerk, a benefit readily recognizable to a POSITA to vehicles including passenger cars. (*Id.*, ¶ 29.)

GKN's arguments (POR at 49–50) that the combination of Teraoka and Burrows would be contrary to Teraoka's intended purpose of reducing drag loss and fuel efficiency are unsupported. Simply stating that Teraoka would be rendered "inoperable" is insufficient, and GKN provides no basis for its position other than speculating that the switching quickly from 2WD to 4WD could reduce fuel efficiency. But as noted above, this argument too-narrowly defines Teraoka's principle

of operation, and Teraoka's principle of operation (allowing for selective 2WD and 4WD operation while reducing drag in 2WD mode) would still be satisfied. (Ex. 1008, ¶ 30.)

B. Burrows Is Not Limited to ATVs

GKN attempts to argue that Burrows is directed to small, straddled all-terrain vehicles" with handlebars (POR at 49) used for aggressive driving rather than passenger cars. This is blatantly wrong. (Ex. 1008, ¶ 33.) First, the figures in Burrows illustrate six-cylinder engines. No small, straddled ATVs with handlebars have six-cylinder engines. (*Id.*, ¶ 32.) Second, Burrows never describes "aggressive" driving, as admitted by Dr. Stein (Ex. 1012, 127:1–2), and thus should not be read as limited to "aggressive" driving scenarios more likely to be encountered with small, straddled ATVs with handlebars. And, even if Burrows is read as suitable for aggressive driving scenarios, Dr. Stein testified that passenger cars (using a Land Rover as an example) can also encounter aggressive driving scenarios. (*Id.*, 127:13–17, 131:11–20.) Third, Burrows describes embodiments using a GKN free running differential, intended for use in passenger cars rather than small, straddled ATVs. (Ex. 1004, 5, line 18; Ex. 1010; Ex. 1008, ¶ 34.)

Fourth, the admitted prior art in Burrows (U.S. Patent No. 5,105,901 (Ex. 1013)) is directed to passenger cars. (Ex. 1004, 5, line 7.) Finally, Burrows states that its invention is applicable to vehicles with longitudinally-mounted engines. (Ex. 1004, 12, lines 18–20; *see also* Ex. 1012, Stein Deposition, 135:20–16 (testifying that the Burrows invention can be used with vehicles with these engineering orientations.) This encompasses many types of passenger vehicles. (Ex. 1008, ¶ 35.)

GKN’s confusion appears to be the result of the British, and in particular Land Rover’s, use of the term “all-terrain vehicle” to cover passenger cars in contrast to American usage of the term “ATV” to cover small, straddled, primarily off-road vehicles.¹ (*See, e.g.*, Ex. 1011

¹ Mr. Becker attempted to point out this discrepancy in his deposition, but his testimony was ignored by GKN. (Ex. 2020, 91:8–25 (“it depends on what you mean by ATV because like in England, an ATV’s an all-terrain vehicle...[a]nd that includes Jeeps, trucks, Land Rovers, etc...”)) and 189:9–17 (“Again, that’s going to depend on the ATV. Again, if you – if you – if you’re talking like England, they’re talking Land Rovers as ATVs. Land Rover’s the same as an on-road car....”).)

stating “Around this time [Land] Rover started to develop a new all-terrain vehicle, inspired by the American Jeep...” And, as is apparent from the front page of Burrows, the agent is Land Rover, based in the United Kingdom.

Regardless, even if Burrows was limited to small, straddled ATVs, the Board already recognized that Burrows constitutes analogous art and is relevant for an obviousness analysis because Burrows is in the same field of endeavor—4WD drivelines—as Teraoka and the ’440 patent. (Decision at 29–30.) Accordingly, a POSITA would have been motivated to use the teachings of Burrows in the Teraoka system. And, because GKN’s expert testified that Burrows could be implemented in a sport utility vehicle used for on-road, city driving, a POSITA could combine these systems with a reasonable expectation of success. (Ex. 1012, 132:5–19.)

C. The Petition Identifies Which Mechanism in Burrows Would Be Combined with Teraoka

GKN maintains its argument (POR at 51–54) that JTEKT did not explain which of the three speed synchronizer mechanisms taught by Burrows would be incorporated into Teraoka. But in the deposition of GKN’s expert, Dr. Stein admitted that Mr. Becker identified the second

embodiment. (Ex. 1012, Stein Deposition, 122:17–20.) And, the same argument was dismissed by the Board in the Institution Decision (at 30) because the claim charts in the petition and accompanying declaration clearly explain that the second mechanism is combined with Teraoka. (See Decision at 30; *see also* Ex. 1005, ¶ 52 claim chart, citing second embodiment in Burrows.) This argument can be dismissed again for the same reasons.

IV. SECONDARY CONSIDERATIONS DO NOT SUPPORT NONOBVIOUSNESS OF CLAIMS 2–3 AND 6–7

GKN makes a last-ditch argument (POR 54–59) that secondary considerations support nonobviousness of claims 2–3 and 6–7. These arguments fail to meet GKN’s burden of production regarding secondary considerations because GKN has provided no evidence that the product relied upon—the GKN Twinster—is even covered by the claims of the ’440 patent or that the alleged commercial success and industry praise and awards of the Twinster are related to the features of claims 2–3 and 6–7. Indeed, GKN’s expert Dr. Stein stated that he did not study and has no opinion on whether or not the ’440 patent covers the Twinster. (Ex. 1012, 75:14–19.) Without this nexus, there is

no persuasive evidence of secondary considerations sufficient to overcome the *prima facie* case of obviousness established by JTEKT.

Although GKN points to purported industry praise for the Twinstar, none of the exhibits attribute their “praise” specifically to the features of claims 2–3 (two side shaft couplings and achieving longitudinal and transverse compensation without a differential) and 6–7 (using a speed synchronizer and a frictionally engaged multi-plate clutch). Rather, Ex. 2029 and Ex. 2035 explain one of the benefits of the Twinstar is its ability to disconnect the rear wheels, a feature of claim 1. (Ex. 2029, 2; Ex. 2035, 2 (discussing cutting parasitic losses by decoupling the rear axle.) And, while Ex. 2026 and Ex. 2029 discuss the benefits of torque vectoring generally (ostensibly covered by claims 2 and 3), torque vectoring can be achieved with technologies other than a two clutch system, and thus cannot be attributed to the claims of the patent. (Ex. 1012, Stein Deposition, 97:9–22 (explaining torque vectoring can be achieved with a braking system).) Ex. 2031 says that the Twinstar is one of “several new technologies which, combined, can lower fuel consumption...” (Ex. 2031, 1.) Thus, this praise is not attributed specifically to the Twinstar, and even less to any specific

features of the Twinster covered by claims 2–3 and 6–7. And, although GKN tries to characterize the torque vectoring achieved by the Twinster as an “unexpected result” (POR at 56), Dr. Stein testified that torque vectoring was known in the art since before the date of the ’440 patent. (Ex. 1012, 98:2–99:1.) Thus, it is not an “unexpected result.”

GKN’s alleged evidence of commercial success is equally unpersuasive as it lacks any nexus. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006). (“Evidence of commercial success . . . is only significant if there is a nexus between the claimed invention and the commercial success.”) Moreover, GKN provides no factual evidence in support of its alleged commercial success. Although Dr. Stein stated that the Twinster will be introduced in 24 vehicle launches between 2015–2019, he confessed that he does not know how many AWD vehicles are launched a year (so this number has no frame of reference), or even whether the 24 launches refers to separate and distinct vehicle launches or if it includes model year launches of the same vehicle. (Ex. 1012, Stein Deposition, 137:15–24.)

Finally, GKN points to Exs. 2030 and 2032 as proof of industry awards related to the Twinster. But, Ex. 2030 explains that the award

is for the “outstanding levels of collaboration” between GKN and Ford, not for any feature of the Twinstar covered by claims 2–3 and 6–7. (Ex. 2030, 2.) Moreover, Ex. 2030 specifically calls attention to the “innovative combination of new gearing ratios and control algorithms” of the Twinstar as contributing to its success. As noted by Dr. Stein, another patent covers the Twinstar’s control strategy. (Ex. 1012, 102:6–16; *see also* Ex. 2017, ¶ 107; Ex. 2025.) As such, this award does not support nonobviousness of the ’440 patent. And, as noted by GKN (POR at 58) Ex. 2032 is merely a nomination (submitted by GKN itself!), thus having no probative value.

V. AUTOMOTIVE TECHNOLOGY CAN BE OBVIOUS

An over-arching theme of the POR is that the technology of the ’440 patent is so complicated that it cannot be obvious. (*See, e.g.*, POR at 36 (replacing power drive units “involves a multi-pronged complex set of processes,” 37 (“Given the complex interplay between the drivetrain system, the other vehicle systems...”), and 39 (“each iteration of a component change requires complex modeling and testing to

determine the impact...”).² This argument—implying that no drivetrain patent could ever be found obvious—fails. Many extremely complicated technologies are routinely found to be obvious when simply combining elements known in the art, even technologies considerably more complex than drivetrain design, an area of study and practice that has been around for over 100 years. (See Ex. 2012, 3 (“The first publication [on driveline dynamics analysis], as far as it is known, was written in 1905”), interpolation added; Ex. 1012, Stein Deposition, 44:15–45:2 (“driveline dynamics analysis started in early 1900s...engineers have been trained and have evolved in their use of these systems since then at least”).) In fact, the quintessential obviousness case *KSR* was directed to automotive technology. 550 U.S. 398 (2007). As such, the allegedly complicated nature of the ’440 patent cannot save it from obviousness.

² Notably, GKN never argues that the combinations are not *possible*, simply that they may require “complex” testing to implement.

VI. THERE ARE NO ANOMALIES WITH THE BECKER TESTIMONY

GKN points to alleged “anomalies” in Mr. Becker’s testimony, all fallacious points simply attempting to undercut Mr. Becker’s credibility. First, GKN notes that Mr. Becker had two colleagues review his declaration (POR at 59). Rather than discrediting Mr. Becker, this proves that two more experienced mechanical engineers fully agreed with Mr. Becker that claims 1–7 are unpatentable. Next, GKN notes (POR at 59–60) that the Petition and Mr. Becker’s declaration are substantively similar and that he did not prepare the claim charts, rather agreed to them. This is unsurprising, because Mr. Becker’s opinions provided the basis for JTEKT’s Petition. And, GKN’s expert provided precisely the same testimony: although he did not draft his declaration in its entirety, he reviewed and edited it (*i.e.*, “agreed” to it). (Ex. 1012, 139:10–140:10.) As the Board has recognized, it is common practice for counsel to prepare initial drafts of an expert report based on discussion with the expert. *Pevarello v. Lan*, Interference No. 105,394, Paper 85, at 21 (BPAI Jan. 12, 2007). GKN seems to take issue with Mr. Becker’s broad areas of expertise (which includes white water rafting) (POR at 60), but nothing precludes an expert from having

expertise in multiple areas. Indeed, Mr. Becker’s accomplishments in white water rafting are a point of pride listed on his professional profile and do not affect his vast experience in drivetrain design. Finally, GKN’s attempts to characterize Mr. Becker’s testimony as using the ’440 patent as a blueprint are baseless, contradictory to his Declaration, and simply inconsistent with a fair reading of his testimony. (Ex. 2020, 144–147.)

If GKN wishes to look for real anomalies in testimony, it needs look no further than its own expert’s contradictory statements. For example, Mr. Stein’s declaration (Ex. 2017) states in ¶ 77 that he annotated Figure 1 of Teraoka, but in his deposition he testified that he did *not* make those annotations. (Ex. 1012, 78:4–5.) And, Dr. Stein testified repeatedly that he had not studied the Watanabe patent “in detail,” a serious concern given the importance of Watanabe to this proceeding. (*Id.*, 103:24–104:11.)

VII. CONCLUSION

All the features of claims 2–3 and 6–7 are known in the prior art and their functions in the prior art are virtually identical to those claimed. And, there are numerous reasons to combine the disclosures

in the prior art references. For all the reasons discussed above, GKN's rebuttal is deficient in every way. The instituted claims are obvious based on a preponderance of the evidence and should be cancelled.

Respectfully submitted,
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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies service of PETITIONER'S REPLY TO PATENT OWNER RESPONSE IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW and EXHIBITS 1008-1013 on the counsel of record for the Patent Owner by filing this document through the PTAB E2E System as well as delivering a copy via electronic mail to the following address:

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that this document complies with the type-volume limitations of 37 C.F.R. § 42.24. This reply contains 5596 words, excluding the parts of the brief excepted by 37 C.F.R. § 42.24(c), as calculated by the Microsoft Word program used to prepare the document.

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