

# EXHIBIT J

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### **Obviousness of U.S. Patent No. 7,237,634 Claims 33-44, 46, 49, 50, 52-55, 68, 105, 188, 189, 199-206, 208, 210 over Severinsky '970 in View of One or More of Secondary References**

To the extent Severinsky '970 does not disclose any particular limitation below, or aspects thereof, expressly or by implication, such limitation(s) would have been known to a person of skill in the art and/or it would have been obvious to combine such limitation(s) with one or more of the prior art references identified and cited herein, including Adler, Anderson, Drozd, Farral, Graf, Hosaka '083, Hosaka '697, Kawamura, Lateur, Ma, Moroto, Nii, Onari, Paefgen, Probst, Quigley, Suga, Vittone, and Yamaguchi.

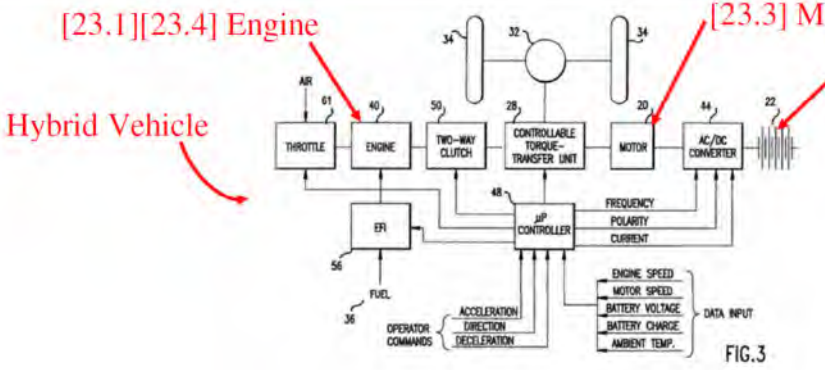
U.S. Patent No. 7,237,634	Severinsky '970 <sup>1</sup> + One or More Secondary References
33[pre]. A method for controlling a hybrid vehicle, comprising:	Severinsky '970 discloses a "Hybrid Electric Vehicle" and a "method for controlling a hybrid electric vehicle." Severinsky '970 at Abstract. Figure 3 illustrates a block diagram of the principal components of [the disclosed] ... hybrid vehicle. Severinsky '970 at 7:45-46.  <u>Severinsky '970 at Fig. 3:</u>

<sup>1</sup> U.S. Patent No. 5,343,970 ("Severinsky '970")

<sup>2</sup> U.S. Patent No. 5,533,583 ("Adler"); C. Anderson, et al., *The Effects of APU Characteristics on the Design of Hybrid Electric Vehicles*, SAE Technical Paper 950493 (1995) ("Anderson"); U.S. Patent No. 5,850,485 ("Drozd"); U.S. Patent No. 5,656,921 ("Farral"); U.S. Patent No. 6,116,363 ("Frank"); U.S. Patent No. 5,788,004 ("Friedman"); U.S. Patent No. 6,188,945 ("Graf"); U.S. Patent No. 4,721,083 ("Hosaka '083"); U.S. Patent No. 4,625,697 ("Hosaka '697"); U.S. Patent No. 4,850,193 ("Kawamura"); U.S. Patent No. 5,823,280 ("Lateur"); WO 92/15778 ("Ma"); U.S. Patent No. 5,697,485 ("Moroto"); U.S. Patent No. 5,650,931 ("Nii"); U.S. Patent No. 5,189,621 ("Onari"); Paefgen, et al., *Der Audi Duo – das erste serielle Hybridfahrzeug*, ATZ Automobiletechnische Zeitschrift 99 (1997) 6, p. 316-32 ("Paefgen"); U.K. Patent Application No. 2 318 105 ("Probst"); C.P. Quigley, et al., *Predicting the Use of a Hybrid Electric Vehicle*, IFAC Workshop on Intelligent Transportation Systems Components for Autonomous and Semi-Autonomous Vehicles 29(4) (1996) 129-134 ("Quigley"); U.S. Patent No. 5,850,485 ("Suga"); O. Vittone, et al., *Fiat Conceptual Approach to Hybrid Cars Design*, 12<sup>th</sup> International Electric Vehicle Symposium (1996) 129-134 ("Vittone"); U.S. Patent No. 5,865,263 ("Yamaguchi").

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U.S. Patent No. 7,237,634	Severinsky '970 <sup>1</sup> + One or More Secondary References
	 <p>[23.1][23.4] Engine</p> <p>[23.3] Motor</p> <p>Hybrid Vehicle</p> <p>FIG. 3</p> <p>“Like claim 23, Severinsky [‘970] discloses the essential components of a hybrid vehicle, including an internal combustion engine, an electric motor, a battery, and a microprocessor for controlling the vehicle’s mode of operation in electric mode, an engine-only mode, or a hybrid mode.” IPR2014-000001 Decision, page 14.</p> <p>See also IPR2015-00801, Final Written Decision, page 20 (“We find that claim 23 is disclosed by Severinsky ‘970.”).</p>
<p>[a] determining instantaneous road load (RL) required to propel the hybrid vehicle responsive to an operator command;</p>	<p>Severinsky '970 discloses that the “microprocessor 48” determines the torque required for propulsion of the vehicle” so that the engine is operated in its most efficient operating range. Severinsky '970 at 16:67-17:15. Severinsky '970 discloses that the “microprocessor 48” determines whether the “engine 40 or both “the engine 40 and the motor 20” should be operated in order to provide the “instantaneous torque required for propulsion of the vehicle.” Severinsky '970 at 17:43.</p>

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	<p>Severinsky '970 also discloses that the vehicle is operated “<i>responsive to operator command,</i>” such as application of “accelerator and brake pedals.” See Severinsky '970 at 13:16-21.</p> <p>Severinsky '970 discloses that the “microprocessor 48” determines that “the instantaneous torque required for propulsion of the vehicle” is negative when the vehicle starts down a hill, and the operator lifts his foot from the accelerator pedal. See Severinsky '970 at 10:32-34. During such negative torque requirements, Severinsky '970 teaches that “the kinetic energy of the vehicle and the engine’s excess torque are used to drive the motor 20 as a generator so as to charge the batteries.” See Severinsky '970 at 10:32-36. Severinsky '970 also teaches a “regenerative braking or coasting mode.” See Severinsky '970 at 14:37-53. In this mode the “microprocessor 48” determines the “instantaneous torque required for propulsion of the vehicle” based on the operator’s inputs and the vehicle’s performance and will determine “the instantaneous torque required for propulsion of the vehicle” based on the “instantaneous torque available.” Severinsky '970 at 14:15-21. Specifically, “the instantaneous torque required for propulsion of the vehicle” is negative during “downhill driving” when “the kinetic energy of the vehicle will be fed back from the road wheels to the electric motor 20” and stored in the battery. Severinsky '970 at 14:40-41.</p> <p>Severinsky '970 further discloses that the “microprocessor 48” determines the “instantaneous torque required for propulsion of the vehicle” may be positive when the vehicle “starts to climb a hill.” Severinsky '970 at 10:36-37. During such positive torque requirements “the motor 20 is used to supplement the output torque of the engine.” See Severinsky '970 at 10:37-38. Severinsky '970 also discloses that the “microprocessor 48” determines that “the instantaneous torque required for propulsion of the vehicle” may also be positive when the vehicle is “accelerating and the like.” See Severinsky '970 at 10:40. During this positive torque requirement the “motor 20” is used to provide “additional power as needed for acceleration.” Severinsky '970 at 9:50-51.</p> <p>Severinsky '970 accounts for external forces that act on the vehicle such as wind resistance. “Instantaneous torque required for propulsion of the vehicle” may be</p>

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	<p>response to an operator's command and the correct vehicle operation of the vehicle. Severinsky '970 at 14:9-18.</p> <p>A skilled artisan would have understood that "wind conditions, road conditions, and vehicle speed" are used to calculate the textbook definition of "road load." Severinsky '970 specifically acknowledges that the textbook "road load" forces are actually "responsive to the operator's control inputs" (e.g., operation of the accelerator pedals) in order to determine the "instantaneous torque required to propel the vehicle."</p> <p>It was known prior to September 1998 that the textbook "road load" is defined as "the instantaneous torque required for propulsion of the vehicle" to be positive or negative. For instance, "the instantaneous torque required for propulsion of the vehicle" may be negative when traveling downhill, thereby requiring the driver to press down on the accelerator pedal or press down on the brake pedal in order to slow down the vehicle's acceleration. Alternatively, "the instantaneous torque required for propulsion of the vehicle" may be positive when traveling up a hill or when the driver is accelerating, thereby requiring the driver to press down the accelerator pedal.</p> <p>The '634 Patent also confirms that Severinsky '970 teaches a hybrid vehicle to operate in an operational mode by determining "the instantaneous torque required for propulsion of the vehicle." '634 Patent at 35:3-17.</p> <p>The '634 Patent itself states that the torque-based control strategy disclosed in Severinsky '970 is employed by the hybrid vehicle disclosed in the '634 Patent at 25:4-24.</p> <p>"Although Severinsky describes the use of 'speed' as a factor considered by the microprocessor, Severinsky makes clear that the microprocessor also considers 'torque' requirements in determining when to run the engine." IPR2 Written Decision, at 16. "And, while Severinsky may not use the term 'torque' expressly, its description of the engine's operation being 'responsive to the vehicle's propulsion requirements' is the same as the engine's operation being responsive to an operator's command and the correct vehicle operation of the vehicle."</p>

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