

## Comparison of Paragraphs from Volkswagen's Petition Pages 11-12 and 34-35

A person of ordinary skill in the art, at the time the alleged inventions of claims 17-27 of the '781 patent were made, would have found it obvious to combine the teachings of Jurgen, Smith, Habu, and Davidian, and, in addition, would have been motivated to do so. Jurgen, for example, expressly describes one such motivation: "The motive for using an electronic engine control system is to provide the needed accuracy and adaptability in order to minimize exhaust emissions and fuel consumption, provide optimal driveability for all operating conditions, minimize evaporative emissions, and provide system diagnosis when malfunctions occur." Ex. 1002, p. 12.1. A person of ordinary skill in the art would have been further motivated to combine the teachings of Jurgen, Smith, Habu, and Davidian to "provide optimal driveability for all operating conditions" (Ex. 1002, p. 12.1), to "provide[] the fuel metering and ignition timing precision to minimize fuel consumption (Ex. 1002, p. 12.4), to encourage "fuel efficient driving techniques" (Ex. 1003, 1:22-24), to "obtain preferable shift positions relating to optimum fuel consumption rate in accordance with . . . data detected" (Ex. 1004, Abstract), and to provide an "anti-collision system for vehicles" that "compute[s] the danger-of-collision distance to the object"

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(Ex. 1005, 1:7 and 2:3-4). The '781 patent states that its object is to “provide a system which integrates the ability to issue audible warnings which advise the driver to correct operation of the vehicle in a manner which will enhance the efficient operation thereof with the ability to automatically take corrective action if the vehicle is being operated unsafely.” Ex. 1001, 1:66-2:5. Thus, like the '781 patent, Jorgen, Smith, Habu, and Davidian are concerned with, for example, improving fuel efficiency and safety.

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informed when to shift up or shift down using an indicator containing two lights 10a and 10b as shown in Fig. 1.

A person of ordinary skill in the art, at the time the alleged inventions of claims 1, 2, 4, 5, 7, 8, 10, 12, 13, 15, and 28-30 of the '781 patent were made, would have found it obvious to combine the teachings of Jurgen, Smith, and Habu, and, in addition, would have been motivated to do so. Jurgen, for example, expressly describes one such motivation: "The motive for using an electronic engine control system is to provide the needed accuracy and adaptability in order to minimize exhaust emissions and fuel consumption, provide optimal driveability for all operating conditions, minimize evaporative emissions, and provide system diagnosis when malfunctions occur." (Ex. 1002, p. 12.1). A person of ordinary skill in the art would have been further motivated to combine the teachings of Jurgen, Smith, and Habu to "provide optimal driveability for all operating conditions" (Ex. 1002, p. 12.1), to "provide[] the fuel metering and ignition timing precision to minimize fuel consumption (Ex. 1002, p. 12.4), to encourage "fuel efficient driving techniques" (Ex. 1003, 1:22-24), and to "obtain preferable shift positions relating to optimum fuel consumption rate in accordance with . . . data detected" (Ex. 1004, Abstract). The '781 patent states that its object is to "provide a system which integrates the ability to issue audible warnings which advise the driver to correct operation of the vehicle in a manner which will **enhance the efficient operation** thereof with the ability to automatically take corrective action if the vehicle is being operated unsafely." Ex. 1001, 1:66-2:5

(emphasis added). Thus, like the '781 patent, Jurgen, Smith, and Habu are concerned with, for example, improving fuel efficiency.

Additionally, regarding dependent claims 2, 4, 5, 8, 10, 12, 15, 29, and 30, these apparatus claims merely add functional limitations. The '781 patent does not ascribe any criticality to these functional limitations. Therefore, since the combination of Jurgen, Smith, and Habu teach all of the structural limitations, these dependent claims are obvious in view of the combination of Jurgen, Smith, and Habu. *See, e.g., In re Schreiber*, 128 F.3d 1473, 1477-78 (Fed. Cir. 1997).

A table comparing exemplary portions of Jurgen, Smith, and Habu to claims 1, 2, 4, 5, 7, 8, 10, 12, 13, 15, and 28-30 is set forth below:

| '781 Patent  | Jurgen, Smith, and Habu  |
|--|--|
| <p>1. Apparatus for optimizing operation of a vehicle, comprising:</p> <p><i>[1a]</i> a plurality of sensors coupled to a vehicle having an engine, said plurality of sensors, which collectively monitor operation of said vehicle, including a road speed sensor, an engine speed sensor, a manifold pressure sensor and a throttle position sensor;</p> | <p><b><i>Jurgen, Ex. 1002</i></b></p> <p>E.g., p. 7.6, “There are several applications for rotational speed sensing. First it is necessary to monitor engine speed. . . . Second, wheel speed sensing is required”</p> <p>E.g., p. 7.8, “In electronic transmission applications, information from the road and engine speed sensors, . . . are required for the MCU to select the optimum gear ratio.”</p> <p>E.g., p. 2.5, “Automotive specification and testing guidelines have been developed and published by the Society of Automotive Engineers (SAE) specifically for manifold absolute pressure (MAP) sensors.”</p> |

navigation. Similar types of sensors can be used in crash avoidance, *proximity*, and obstacle detection applications. (emphasis added).

A person of ordinary skill in the art, at the time the alleged inventions of claims 17-27 of the '781 patent were made, would have found it obvious to combine the teachings of Jurgen, Smith, Habu, and Davidian, and, in addition, would have been motivated to do so. Jurgen, for example, expressly describes one such motivation: “The motive for using an electronic engine control system is to provide the needed accuracy and adaptability in order to minimize exhaust emissions and fuel consumption, provide optimal driveability for all operating conditions, minimize evaporative emissions, and provide system diagnosis when malfunctions occur.” Ex. 1002, p. 12.1. A person of ordinary skill in the art would have been further motivated to combine the teachings of Jurgen, Smith, Habu, and Davidian to “provide optimal driveability for all operating conditions” (Ex. 1002, p. 12.1), to “provide[] the fuel metering and ignition timing precision to minimize fuel consumption (Ex. 1002, p. 12.4), to encourage “fuel efficient driving techniques” (Ex. 1003, 1:22-24), to “obtain preferable shift positions relating to optimum fuel consumption rate in accordance with . . . data detected” (Ex. 1004, Abstract), and to provide an “anti-collision system for vehicles” that “compute[s] the danger-of-collision distance to the object” (Ex. 1005, 1:7 and 2:3-4). The '781 patent states that its object is to “provide a system which integrates the ability to issue audible warnings which advise the driver to correct operation of the vehicle in a manner which will *enhance the efficient*

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