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**United States Patent**

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*David J. Kyfos*

*Director of the United States Patent and Trademark Office*



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# United States Patent

Tsuto et al.

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(45) Date of Patent: **Dec. 28, 2010**

(52) **PROCESS FOR PRODUCING DIESEL FUEL OIL FROM FAT**

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5,354,878 A 10/1994 Connemann et al.

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(Continued)

(73) Assignee: **REVO International Inc., Kyoto (JP)**

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(54) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 464 days.

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(21) Appl. No.: **10/580,340**

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(52) **U.S. Cl.** ..... **44/308; 44/388; 44/451**

(58) **Field of Classification Search** ..... **44/605, 44/447, 388, 307, 306, 308, 451; 210/603, 210/259**

See application file for complete search history.

A process for producing diesel fuel oil from fat and oil comprises producing fatty acid methyl ester for diesel fuel in accordance with transesterification of the fat and oil with methanol, wherein the process further comprises a step of converting glycerol formed as a by-product into methanol, and the obtained methanol is used as a material for the transesterification. In the step of converting glycerol formed as a by-product into methanol, water in an equimolar amount or more to the amount of glycerol is added to glycerol, the obtained mixture is gasified under a pressure of 2 MPa or greater at a temperature of 700° C. or higher to convert the mixture into a gas comprising carbon monoxide and hydrogen, and carbon monoxide and hydrogen are then converted into methanol in accordance with a methanol synthesis process.

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**9 Claims, 1 Drawing Sheet**

