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Fougere

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(54) **METHOD OF OPERATING A SMALL-SCALE WATER SEPAROMETER TO PRE-TREAT A FILTER PRIOR TO TESTING A FUEL SAMPLE**

(71) Applicant: **Alan James Fougere**, Falmouth, MA (US)

(72) Inventor: **Alan James Fougere**, Falmouth, MA (US)

(73) Assignee: **D-Z INC.**, N. Falmouth, MA (US)

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(58) **Field of Classification Search**
CPC G01N 33/18; G01N 33/22
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See application file for complete search history.

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Primary Examiner — Arlen Soderquist

(74) *Attorney, Agent, or Firm* — Milton Oliver

(57) **ABSTRACT**

The safety and proper performance of jet aircraft engines requires that any contamination of jet fuel, for example by water or by improper contaminants, be filtered (removed) before delivery of the fuel, through hoses, to the fuel tanks of the aircraft. Coalescing devices and filters in the fuel delivery system are used to attain this result. A typical problem is that filter materials chemically react with surfactants, and this causes the filter subsequently to “disarm” or fail to perform its function of removing water, which can lead to delivery of fuel containing excessive water. A solution to this problem is to pre-test the fuel for such surfactants by feeding a small fuel sample that has been mixed with “challenge water” through a smaller ‘representative’ test filter and monitor the performance. Using a fluorescent dye in the “challenge water,” the amount of water that passes the test filter is detected, compared with a baseline data and fuel quality determination is made. From the result of the small-scale test, the fuel condition can be inferred and, based thereon; action can be taken to treat the fuel, prior to further distribution, such that it will not disarm field filter-coalescers in a typical fuel distribution system. The use of a fluorescent dye enhances the ability to make this determination of very small representative fuel filters. The fuel evaluation process is fully automated, thereby avoiding human-factor variables and assuring repeatable results.

2 Claims, 2 Drawing Sheets

