



US 20070272209A1

(19) **United States**

(12) **Patent Application Publication**  
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(10) **Pub. No.: US 2007/0272209 A1**

(43) **Pub. Date: Nov. 29, 2007**

(54) **MACHINE FLUID SENSOR**

division of application No. 10/452,264, filed on Jun. 2, 2003, now Pat. No. 7,043,969.

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(60) Provisional application No. 60/419,404, filed on Oct. 18, 2002.

**Publication Classification**

(51) **Int. Cl.**  
**F02D 45/00** (2006.01)  
**G01N 29/02** (2006.01)  
(52) **U.S. Cl.** ..... **123/350; 73/64.53**

(57) **ABSTRACT**

A sensor for sensing one or more properties of a vehicle fluid has a tuning fork resonator adapted to contact the fluid. The tuning fork resonator comprises two tines and is operable to oscillate so that the two tines move in opposite phase at a frequency of less than 1 MHz while contacting the fluid to generate a resonator response indicative of one or more properties of the fluid. In another aspect, a sensor includes a substrate and a flexural resonator on the substrate and adapted to contact the fluid. Circuitry for operation of the resonator is on the substrate. The resonator is adapted to receive an input signal and to oscillate while contacting the fluid to generate a resonator response indicative of one or more properties of the fluid. One suitable application for the invention is monitoring the condition of a vehicle engine oil.

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(21) Appl. No.: **11/837,415**

(22) Filed: **Aug. 10, 2007**

**Related U.S. Application Data**

(60) Continuation of application No. 11/433,265, filed on May 12, 2006, now Pat. No. 7,254,990, which is a

