

February 22, 2006

**Subject:** Optical Fluid Quantity Sensor Prototype

A need for continuous fluid quantity measurements exists in military and commercial applications. The present state of the art involves deployment of capacitive or simple float type sensors. The disadvantage of both capacitance and float type devices is their reliance on electronic signals in sensitive areas, such as a fuel tank. In some cases, electrical sensors may be inappropriate because of hazards posed by arcing in explosive environments. In other applications, electrical based sensors may be prone to electronic interference or jamming. Strube, Inc. is continuing investigation a novel approach to fluid level sensing through the application of optics, and recently received a patent for one such device, see Figure 1. In referring to Figure 1, the optical system exploits the characteristic of total internal reflection for light, and fluorescence radiation generated in doped glass or resin sensor. The sensor rod is inserted into the liquid to be sensed then pumped with light guided to the device through optical fiber. Light is guided through the sensor or absorbed into the liquid depending on the level. The amount of light absorbed by the liquid reduces the fluorescent radiation, the intensity of which is captured by a second optical fiber and converted into an electrical signal at a location away from the sensor.

The probe design is quite simple and is completely passive requiring no active electronics at the probe. A photograph of one of the probes which has been extensively evaluated for performance in various fluids is shown in Figure 2.

Strube is a small business having 14 employees and is seeking a partner for advancing the development of the optical fluid quantity measurement system. While looking for a partner, we are continuing the investigation of sensor probe formulations and sensor response with various fluids and environments.

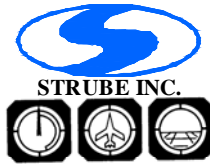


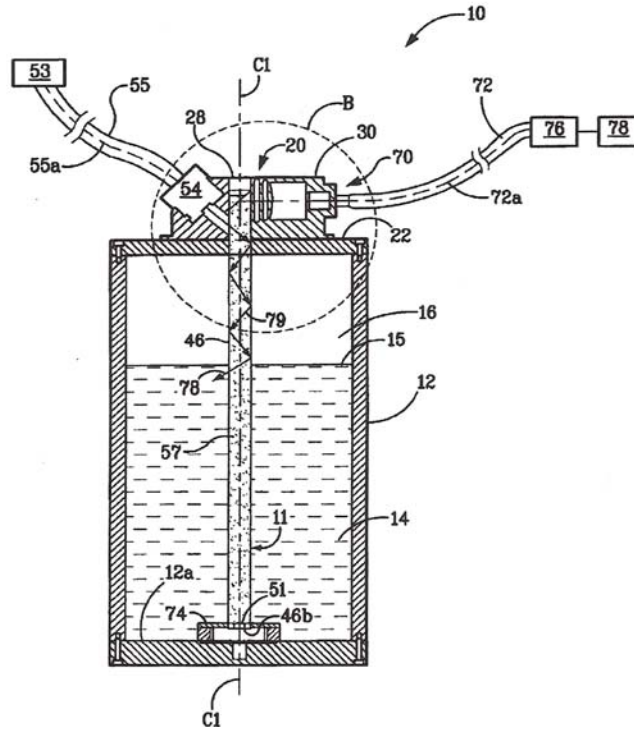
Figure 1, Diagram from Optical Fluid Quantity Measurement System Patent

U.S. Patent

Dec. 14, 2004

Sheet 2 of 9

US 6,831,290 B2





**Figure 2, Optical Fluid Quantity Measurement System Probe**



Page 3 of 3

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND MAY NOT BE DISTRIBUTED,  
DISCLOSED TO, OR DISCUSSED WITH A THIRD PARTY WITHOUT PRIOR WRITTEN PERMISSION  
FROM STRUBE INC (CAGE 54034) MARIETTA, PA 17547-1101

