Activa Netcom & Energy Systems

Fiber Bragg grating for liquid level measurement

Overview

In this paper, we present a fiber sensor using a fiber Bragg grating encapsulated in a half-polymer-filled metal cylinder for measuring liquid level variation. The operating mechanism of this novel design is based on transferring radial pressure into axial strain to induce Bragg wavelength shift. Referencing to a same liquid level (of a liquid reservoir or reference sensor), a group of such sensor interrogated simultaneously by a FBG interrogator can construct a differential. The design and packaging of simple, small, and low cost sensor heads, used for continuous liquid level measurement using uniformly thinned (etched) optical fiber Bragg grating (FBG) are proposed. The sensor system consists of only an FBG and a simple detection system. Characterization is performed by submerging.

Article Content

Fiber optic liquid-level sensor using a long fiber Bragg grating ...

A technique for liquid-level sensors based on a long fiber Bragg grating (FBG) is presented and experimentally demonstrated. The measurement system is based on the

Continuous liquid level monitoring sensor system using fiber Bragg grating

Abstract. The design and packaging of simple, small, and low cost sensor heads, used for continuous liquid level measurement using uniformly thinned (etched) optical fiber Bragg grating (FBG) are

Design of a Sensor System Using Fiber Bragg Grating for Liquid Level ...

In this work, a simple but versatile sensing system for very accurate sensing of liquid level and liquid density is presented. The sensor works based on basic strain sensitivity of Fiber Bragg Grating

Liquid-level monitoring sensor systems using fiber Bragg grating ...

A fiber-optic liquid-level sensor based on the bending of a fiber Bragg grating (FBG) is proposed. The FBG embedded in a cantilever rod such that the elongation and contraction of the

Applications of tilted fiber Bragg grating in liquid parameters ...

In this paper, we present a novel fiber optic sensor for the simultaneous measurement of liquid level and surrounding refractive index based on tilted fiber Bragg grating (TFBG).

Detection of liquid-level variation using a side-polished fiber Bragg ...

A liquid-level sensor based on a side-polished fiber Bragg grating (FBG) is proposed and experimentally demonstrated. The sensor can detect height variation of liquids of arbitrary refractive

A Fiber Bragg Grating Liquid Level Sensor Based on the Archimedes''

Obtained results pave the way for the exploitation of the proposed platform for accurate liquid level monitoring in large-scale storage tanks, useful both for petrochemical industry and for

Liquid level measurement based on a no-core fiber with temperature ...

An optical fiber sensor for simultaneous measurement of liquid level and temperature is proposed and experimentally demonstrated. The sensor is formed by the integration of a no-core

Simultaneous measurement of liquid level and surrounding refractive ...

In this paper, we present a novel fiber optic sensor for the simultaneous measurement of liquid level and surrounding refractive index based on tilted fiber Bragg grating (TFBG). The

Design and realization of a femtosecond-laser-inscribed fiber Bragg ...

In this work, a versatile liquid level sensor using Femtosecond-Laser-Inscribed Fiber Bragg Gratings (high tensile strength) is designed and implemented for accurate measurement of liquid

High resolution liquid level sensor based on Archimedes'' law of ...

In this paper, we present a polymer optical fiber (POF) Bragg grating (FBG) to measure liquid level based on Archimides'' law of buoyancy. The sensor consists of polymer 3D-printed rods with different

Fiber Bragg grating-based optical filters for high-resolution sensing ...

In-fiber Bragg grating filters continue to proliferate, and their applications expand with the rapid advancement of fiber optic component fabrication techniques. Mathematical models for the

A Fiber Bragg Grating Liquid Level Sensor Based on the Archimedes''

We present a very simple and versatile fiber optic sensor for liquid level measurements based on the Archimedes'' law of buoyancy. It includes a proper mass suspended in the liquid with

Design of a Sensor System Using Fiber Bragg Grating for Liquid Level ...

A fiber laser sensor for simultaneous measurement of liquid level and temperature is proposed and demonstrated experimentally. The sensor is based on two taper structures and a fiber

Simultaneous Measurement of Liquid Level and Temperature Using

Abstract: We present a tilted fiber Bragg grating (TFBG)-based fiber optic sensor for the simultaneous measurement of liquid level and temperature. Due to different responses of cladding

Fiber-Liquid-Level Sensor Based on A Fiber Bragg Grating

In this paper, we present a fiber sensor using a fiber Bragg grating encapsulated in a half-polymer-filled metal cylinder for measuring liquid level variation. The operating mechanism of this novel design is

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