Buenos Aires Phase Shift Capacitor Detection

How is phase shift determined in a capacitance sensor?

The phase shift has been determined between the reference signal from a quartz oscillator and the response signal from the capacitance sensor. The phase shift was measured using a digital storage oscilloscope in order to test the developed method. Both signals were converted to digital form and the phase shift was determined numerically.

How a capacitance sensor compared with a phase-shift detector?

The results of these measurements,for the two methods tested,are compared in Fig. 13. It can be noticed that capacitance sensor with phase-shift detector provides nearly proportional signal,whereas measuring the frequency deviation gives a non-linear signal,and a low sensitivity at the low void-fraction range.

Can a capacitance sensor measure void fraction in two-phase flows?

Conclusions A theoretical model and experimental verification of a method of measuring void fraction in two-phase flows via determination the phase shift between a response signal from a capacitance sensor and a reference one were presented in this paper.

Can a phase sensitive detector be used for capacitance tomography?

A phase sensitive detector operating at 1 MHz was used by Geraets and Borst for capacitance measurements. From changes in sensor capacitance, the authors have determined the void fraction in the pipeline. Various methods of capacitance measurements used in capacitance tomography have recently been reviewed by Rzasa . Table 1.

Can a capacitive sensor network handle fast transients and small capacitance changes?

This study describes a novel circuit configuration, capable of handling fast transients and small capacitance changes by the evaluation of the signals of a capacitive sensor network. The circuit is...

What is the uncertainty of the phase shift determination?

The uncertainty of the phase shift determination is 2 ps/1 ns = 0.2%(time scale resolution/phase shift of the signal between void fraction = 0% and 100%). In order to reduce the noise and radio-frequency distortion errors,the phase shift was determined for the signals averaged by the oscilloscope from 32 consecutive sine periods.

Passing the first circuit path through a reference comparator and the second circuit path through a phase-shifting comparator produces two output signals that are phase-shifted with respect to each other when the test capacitive device is functional. Analysis of the output signals allows detection or measurement of the test capacitive device.

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In this paper, a phase shift detection system of flow impedance is designed based on a concave capacitance sensor (CCS). The flow impedance of oil-water stratified flow is investigated by establishing an equivalent circuit model and a finite element model. The influence of exciting frequency and sensor geometric parameters on the phase shift output of the CCS is studied to ...

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Therefore a phase shift is occurring in the capacitor, the amount of phase shift between voltage and current is +90° for a purely capacitive circuit, with the current LEADING the voltage. The opposite phase shift to an inductive circuit. A very CIVIL relationship. One way to memorise these current/voltage (I/V) relationships in capacitors(C) and inductors (L) is to consider the positions ...

In this paper, a new measuring procedure was tested utilizing the phase shift between the sinusoidal signal passing the capacitance sensor and a reference signal. The void fraction is determined directly from this phase shift instead of measuring the capacitance as void fraction indicator.

C-V conversion based on switched-capacitor techniques (Fig. 1c) [20], [33] is especially used for on-chip integrated circuits [6], [35]. The last interesting proposal of the interface circuit is a solution based on a relaxation oscillator (Fig. 1d). Instead of a square wave, a triangle wave with an amplitude that depends on the sensor capacity is used. Therefore, a ...

A phase shift between a reference signal and the output signal of a phase shifter circuit (based on an active all-pass filter) with the capacitance sensor is measured using an oscilloscope. Often, capacitive sensors are implemented as smart sensors; that is, they work as data acquisition systems.

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In this paper, an online application to measure the output stage capacitance in an isolating phase-shifted full-bridge DC-DC converter using a direct capacitor impedance measurement is presented. The impedance analysis is used to determine the change in capacitance, and thus detect the capacitor ageing during the normal operation of the ...

4 Figure 6: 0.008H-bridge: Compensating failures results in no unbalance signal [1] The following cases are two examples of undetectable elements failure in a 107 Mvar, internally fused capacitor

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3.1 Principle of online capacitance monitoring. As can be seen from Sect. 2, there are two working states of an SM.When the MMC is inserted into the system, the SM capacitor continues to charge or discharge. The capacitor voltage and switch signal of the SMs are shown in Fig. 3, where the red line is the capacitor voltage and the blue line is the switch ...

To solve this problem, the mapping relationship is studied between the converter output voltage and capacitor voltages by analyzing carrier phase-shifted sinusoidal pulse width modulation technique, and special switching mode is first found. Based on the abovementioned finding, without changing the conventional CHB topology, an improved ...

In this study, the application of the phase-shift modulation to a double half-bridge resonant inverter supplying inductive loads with a common resonant capacitor is analysed in order to control the output power provided to the load of each converter.

One technique for measuring an unknown sensor capacitance is using the phase delay of an RC network with a resistor and the sensor capacitor. By buffering the RC network ...

One technique for measuring an unknown sensor capacitance is using the phase delay of an RC network with a resistor and the sensor capacitor. By buffering the RC network with CMOS inverters, a...

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