Re: Conductivity Sensor

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- *From*: Luhan Monat <x@xxx>
- *Date*: Sat, 25 Jun 2005 22:39:35 −0700

John Popelish wrote:

> Luhan Monat wrote:
>
> > Hi,
> >
> > I'm constructing a Hydroponics system, and need to
> > monitor the conductivity of the nutrient solution.
> >
> > Any suggestions on what to use for the sensors for
> > stable long−term readings?
> >
> > Thanks,
>
> My favorite kind of sensor is a toroidal transformer type. It is completely enclosed in insulating material and is very resistant to fouling. Unfortunately, the electronics are fairly expensive. I think that Cole Parmer has some units for $360. But it might be fun to try to make one of these sensors from simple parts.
>
> The concept is that you excite a toroidal core (high permeability) with AC through a winding. Then you place a second toroid beside that one with another winding. The two cores are enclosed in insulation, with a hole passing through both cores. When submersed, the first core induces 1 turn's worth of voltage around the liquid loop that passes through the hole. The current that voltage moves through the liquid is sensed by the second core, acting as a current transformer. You amplify the AC current from the second core, rectify it, and the result represents the conductivity of the solution.

Hey, that sounds interesting. I see why it would work.

Alternativly, maybe using the fluid as part of an 'air core' inductor. Conductive water may change the inductance. Easy to test by using the inductor in an oscillator configuration and using the Micro as a crude frequency counter.

Also, making an 'air core' capacitor using two closely spaced insulated plates. Capacitors are known to be sensitive to the dielectric used between the plates.

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"Any sufficiently advanced magick is
indistinguishable from technology."
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