Re: Current transformer compensation idea

Source: http://sci.tech−archive.net/Archive/sci.electronics.design/2004−07/4299.html

---

From: analog (*analog_at_ieee.org*)
Date: 07/27/04

Date: Tue, 27 Jul 2004 23:10:55 GMT

"Martin Schönegg" wrote:

> *Hi analog,*
> *>*
> *whats about LEM? They compensate their cores to zero. DC and low*
> *frequencies with a hall sensor and higher frequencies inductive.*
> *See their literature for details.*
> *>*
> *MArtin*

Hallo Martin,

Ich hab' grad mal nachgeschaut... hast recht, sehr interessant.
Viel thanks for das Tip. I noticed that they do their Hall based
sensors just like Tektronics does their clamp−on current probe.
Looks like they have same drift and dc bias problems too.

Their non−Hall, high performance triple coil construction feedback
based sensors are very intriguing, but they look expensive. What
has been your experience with their products?

Gruss −− analog

> *"analog" <analog@ieee.org> schrieb im Newsbeitrag...*
> *>*
> *| A typical current transformer may have a one turn primary and*
> *| a hundred or more secondary turns. The secondary is normally*
> *| terminated into a small resistor (possibly through diodes)*
> *| such that the core must support a small ac flux excursion.*
> *| With secondary signals in the volt range, the primary voltage*
> *| burden is minimal, usually a few millivolts.*
> *|*
> *| Although dc drift may be a problem for some configurations,*
> *| a typical current transformer rarely comes anywhere close to*
> *| saturation during normal operation. In spite of this,*
> *| inductive signal droop may be a problem in high fidelity*
> *| applications (magnetizing current is typically very non*

> | *linear).*
> |
> | *I have been toying with the idea of using active circuitry to*
> | *minimize magnetizing current. My first idea was to arrange*
> | *the current transformer to drive the summing junction of an*
> | *opamp rather than terminating it into a small resistor. This*
> | *would tend to keep the voltage across the CT's secondary at*
> | *zero, which would be a noticeable improvement over the*
> | *standard arrangement.*
> |
> | *However, this would still leave the voltage burden from the*
> | *sense current flowing through the CT's winding resistance.*
> | *Even this could be largely nulled out by actively driving the*
> | *"grounded" end of the current transformer with a feed forward*
> | *signal proportional to current appropriately scaled just to*
> | *equal the drop developed on the internal winding resistance.*
> |
> | *Okay, I have never built this circuit and don't have a real*
> | *application for it, but the simulator says all works great.*
> | *What I am wondering is whether anyone has used or seen such*
> | *a technique before or could imagine a situation where such a*
> | *circuit might prove useful. Note that this technique does not*
> | *eliminate the dc saturation problem (although it does make the*
> | *CT's core "look" much bigger). Comments or further ideas?*
> |
> | *analog*