

Re: Dual sine wave generator with variable frequency and 90 degree phase difference

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- *From:* MooseFET <kensmith@xxxxxxxxxx>
  - *Date:* Sat, 6 Sep 2008 00:44:37 -0700 (PDT)
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On Sep 6, 9:47 am, "Ken S. Tucker" <dynam...@xxxxxxxxxxxxxx> wrote:

On Sep 5, 9:14 am, MooseFET <kensm...@xxxxxxxxxx> wrote:

On Sep 5, 7:34 pm, "Ken S. Tucker" <dynam...@xxxxxxxxxxxxxx> wrote:

Hi Steve.

On Sep 3, 6:42 am, Steve <st...@xxxxxxxxxx> wrote:

I'm looking for a waveform generator that outputs two sine waves of the same frequency with 90 degree phase difference (sine and cosine). I need a variable frequency between 0.05 Hz and 10 Hz. Is there an analog design that uses a single potentiometer or perhaps is voltage controlled ? Low distortion is not a requirement.  
Steve

You have a good idea. Use a phase shift oscillator, [http://en.wikipedia.org/wiki/Phase-shift\\_oscillator](http://en.wikipedia.org/wiki/Phase-shift_oscillator) but use 4 filters and make each filter shift 90 degrees then lightly tap into the filter at any 90 degree point. After that, I think MOSFETs can replace the resistors,

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to provide a single voltage control or you'll need 4 pots.  
Ken

The phase shift oscillator is a bad idea for the OP's application.  
You have to control 4 time constants. The state-variable option is  
better because you only have to set two gains.

I think the joke is on me.  
The differential of a sine wave is a cosine wave right?  
So how do we measure the "rate of change" of a sine  
wave?

Avoid measuring rate of change when you can. Integration gets you  
from  $\sin()$  to  $-\cos()$  and  $-\cos()$  to  $-\sin()$

Ken