Subject: Re: What about field coil drivers?
Posted by Wayne Parham on Sat, 29 Jan 2005 11:22:42 GMT
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That's an excellent mention. One certainly has some flexibility when using field coil speakers that isn't there with fixed magnet speakers. You can energize the field coil enough to saturate the magnetic circuit and maximize flux in the gap. Or you can reduce field coil strength to change electro-mechanical parameters of the speaker. You can even modulate the field coil, perhaps making it opposite to the voice coil drive. Then again, since the field coil is an inductor, the ability to modulate its magnetic strength diminishes as frequency rises. It will tend to filter the signal and average the flux.There are two things I'd like to point out. First, a constant-current supply has high source impedance, so it isn't what those guys are thinking about. Constant-current supplies limit current so that even when the load fluxuates, the current flowing is the same. But this means that as the load impedance fluxuates, the voltage across it does too. Constant-voltage supplies maintain a constant voltage regardless of the load. Automobile batteries are a good example, pretty much constant voltage even at high current levels. I think that's what those guys meant when they said they wanted constant-current supplies. They probably really wanted a constant-voltage supply capable of unwavering high current levels. They wanted consistent flux.The second thing I wanted to point out is that the speaker's magnetic circuit can be put into saturation. The pole pieces and the magnet form a circuit, and when the circuit is saturated, it doesn't matter if you add magnetic energy, very little additional magnetic flux is added to the gap. So you can increase magnetic strength from zero to saturation, but if the circuit is already saturated, you cannot add more. What that means, is that if you want to modulate the field coil, it must be done at levels under saturation.