Subject: Determining Compatibility between components
Posted by Marlboro on Sun, 01 Nov 2009 14:43:20 GMT
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Fred made a comment below which is quite worthy of further elucidation. I agree that when using may be $500 in speaker components one might not worry about it, and just enjoy the exercise....

But that's only if one has $500 to throw away. If one has saved $500 for a year to get it on with a speaker design or $1200 over several years then that is as big a deal for that person as spending $10,000 is for someone else. In my case I had a lot of expenses, including $20K+ college bills, three cars costs, health care etc, and squeezing out $1200 for a speaker system over several years on mostly just one salary and a small part time salary from my wife was hard. So for me the $1200 was as big a deal as the $10K was for someone else.

I sort of know how I looked at compatibility between speaker components, but I'm not sure whether there is some protocol for how this is done.

Can anyone explain? Wayne? Fred? Other people who build multiple speakers systems rather than just two or three over a decades?

Marlboro

Subject: Re: Determining Compatibility between components
Posted by Wayne Parham on Sun, 01 Nov 2009 18:09:12 GMT
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To me, "economic compatibility", if I'm understanding you, is sort of a seat of the pants, common sense thing.

Now that's different than technical compatibility. There are a lot of technical reasons why some drivers are more compatible with others in a given system. Things like sensitivity, directivity and frequency range come to mind. For example, I'd never try to make a two-way speaker using a tweeter that craps out below 2kHz with a woofer that rolls off at 1kHz. That's obvious to most people. I'd also not match an 88dB tweeter with a 93dB woofer, although I might go the other way around (and definitely with horns). It's more appropriate to pad tweeters because electrical damping isn't usually terribly important for a tweeter. With a horn, padding allows passive compensation of mass rolloff too, always needed for CD horns. So technical compatibility is a given.

But economic compatibility probably means different things to different people. To me, I usually sort of try to keep the prices of the components in a sort of range. I'd never match a $35 woofer with a $500 tweeter, for example. I might match a $300 woofer with a $50 tweeter, because sometimes that makes sense (tweeters are somtimes cheaper, maybe because of their size). But more often than not, the woofer and tweeter are going to be pretty close in price, a $300 woofer goes with a $150 compression driver and $50 horn. If I'm using a budget woofer, then I'm using a budget tweeter too because I'm making a budget system. To me, that's what economic

compatibility means.

Subject: Re: Determining Compatibility between components
Posted by AudioFred on Sun, 01 Nov 2009 21:04:11 GMT
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I wouldn't be inclined to combine an array of expensive woofers with cheap tweeters or vice-versa, but that wasn't what I was referring to when I mentioned driver compatibility. The issue with driver compatibility is whether the woofer and tweeter arrays will combine to form a seamless and coherent sounding speaker.

Driver compatibility is more important if you're using a passive crossover, which is what's found in most designs. An example of driver incompatibility would be combining a BG RD-75 tweeter with an array of 86dB sensitivity woofers. The woofer array would be too sensitive to combine with the tweeter, and padding a woofer array isn't a good practice.

If you're going active the sensitivity issue becomes moot, as with the Dali Megaline speaker. But the crossover capabilities of the two arrays are still an issue. For example, combining an array of Dayton 3/4" neo tweeters with an array of 7" midwoofers wouldn't work too well, even with an active crossover.

If I were planning to spend $10K on drivers I believe I would want to consider an active crossover to get the best possible sound out of them, and then the issue of amplifier and crossover sound quality and design would also come into play. I would want something that offers the greatest possible resolution and control, and would be looking at DEQX or some other DSP system that gives me the option of combining different crossover frequencies for the woofer and tweeter arrays, asymmetrical slopes, and equalization cabability to smooth any anomalies in the woofer or tweeter array response.

Subject: Re: Determining Compatibility between components
Posted by Wayne Parham on Mon, 02 Nov 2009 03:29:05 GMT
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I agree with you there. Your description of compatibility falls into what I would have called "technical compatibility." That's what I was talking about in terms of matching sensitivity, directivity and response. There's the "technical compatibility" required for good performance, and then there's sort of an "economic compatibility" that's more about whether a combination makes sense financially. It's kind of like picking what drink goes with what food.
