
Subject: Design Stage : a 4-way system

Posted by [Scott L](#) on Sun, 21 Sep 2008 16:23:21 GMT

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An open invitation for those of you familiar with building a 4 way system. I'd like to hear your thoughts. My concern is the lowest x-over frequency. Right now, 60 Hz is the choice. Below 60 Hz will ultimately be infinite baffle bass. No concern there. Where I am perplexed at is my choice of mid-bass. I was leaning towards building a reaction cancelling mid bass horn; I want the impressive dynamic slam of a horn system. Obviously, a problem is that at 60 hz a horn would have to be quite large. Actually, I can make the mouth exit size large enough, it's the length required that bothers me. If I move the x-over frequency to 80, I'm afraid I will be feeding too much of the "slam" range to the subs. My other alternative is to scrap the mid horn idea, and to replace it with 4x 12" pro drivers for mid-bass (per channel). Just for reference, the other two crossover frequencies will be 250 and 3K. All active system. Thanks.

Subject: Re: Design Stage : a 4-way system

Posted by [Norris Wilson](#) on Mon, 22 Sep 2008 17:14:22 GMT

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Hi Scott, Your 4-way speaker sounds like a great adventure. I have been in the idea stage of building a HE system for almost a year now. I have spent a lot of time reading and tail chasing, but nothing built yet. Being a newbie, one has to pay their dues. I have thought about a four-way system myself, but size, cost, and complexity seem to be in my way. It might help if others knew what midrange driver you intend on using, to include loading type, horn, BR, or sealed for example. And possibly include your listening room volume to help with your needs. My thought is if you need the output of four 12" midbass drivers from 60Hz to 250Hz. Possibly two 15" drivers would work as easily while being a little more manageable in a vertically stacked position. A driver like the JBL 2226J for instance could be loaded in a manageable box, BR or sealed for a lot of SPL's out. Here is a design that you may, or may not be aware of in the following link. Hopefully it will give you some ideas. Keep us posted of your progress? Norris

<http://www.audioheritage.org/html/perspectives/drews-clues/system.htm>

Subject: Re: Design Stage : a 4-way system

Posted by [angeloitacare](#) on Mon, 22 Sep 2008 23:00:31 GMT

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this might be an interesting solution : <http://www.superbadcat.com/midBassDesign/midBass.htm>

Subject: Re: Design Stage : a 4-way system
Posted by [Wayne Parham](#) on Tue, 23 Sep 2008 19:16:15 GMT
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That's a tough design choice, isn't it? Another thing to consider besides those you've mentioned is path length and how it affects summing. To get the sound sources to sum properly, you'll need to delay everything else, otherwise phase will be way off.

Subject: Re: Design Stage : a 4-way system
Posted by [Scott L](#) on Fri, 26 Sep 2008 23:38:14 GMT
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Yes, I have been thinking about this for a while now. My brief stint in thinking I could use 4 woofers per channel has now been eradicated due to the height requirement. The mid/ hi is going to be D'Appolito, and I need that tweeter almost exactly dead center ear level. The mid-bass has to be a short length waveguide as opposed to a true horn. I once built a mid horn with a four foot path length, and you are correct Wayne, the phasing was all off. To help clarify: the 2x 12" pro woofers per channel will be side by side, but angled in towards each other. Some day I will have a picture, and it will be worth a thousand words.

Subject: Re: Design Stage : a 4-way system
Posted by [Scott L](#) on Sat, 04 Oct 2008 23:20:55 GMT
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Hi Norris, I apologize, a very demanding work schedule has delayed my response to you. Interesting, I had forgotten about the Drew Daniels system, but read it a few years ago; thanks for bringing it back to my attention. To answer some of your questions: the midrange drivers are the aerogel version of the Audax PRO 7 inch drivers; a very rare and now discontinued item. The tweeters are Stage accompany 8535. I have done some serious thinking, and am going to stick with just two 12 inch drivers per channel for the 60- 250 Hz range. As far as I know, the loading application has not been done before; I call it a reaction cancelling waveguide. For certain, a picture is worth a thousand words, but, it will be many many months before this can happen.... you see, the so-called listening room has not even been purchased yet!! I found one that might work, but it's a built in 1955 home, and have yet to learn the details of how updated all things interior might be. The 12 inch drivers will be the EminenceDefinimax 4012HO. Thanks for your interest.
