Subject: So how does this all work then..?
Posted by spacejazz on Mon, 09 May 2011 17:29:49 GMT
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Hi,

I've made my way here from reading the Econowave threads, which branched off in other directions, one being here.

I really like what I see but living on flattest continent on earth, the kits will be prohibitive to ship. So I came to the forums with the idea to haggle for plans and crossovers. The idea of using the B&C DE250 with a good woofer (JBL and AE are too expensive for now, but provide an upgrade path?)

Is it possible to purchase the plans with xo's suited to pre-determined drivers? I need help with woofer choice, clearly, but once that is established, is it possible?

Sincerely

Ken.

Subject: Re: So how does this all work then..?
Posted by Wayne Parham on Mon, 09 May 2011 17:55:20 GMT
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Decide which model you'd like to build, let me know, and I'll send plans.  The link below has a whitepaper on our design philosophies:
High-Fidelity Uniform-Directivity LoudspeakersI agree with you on shipping costs - Outside of North America, it's sometimes more economical to source the drivers locally.  The crossovers can be shipped at reasonable cost though.  You can buy the unpopulated crossover boards or fully assembled ones.

Subject: Re: So how does this all work then..?
Posted by spacejazz on Mon, 09 May 2011 18:27:02 GMT
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Good morning Wayne,

Thank you for the response and the interesting read.

The Three Pi will fit the bill nicely. My room is quite modest at approximately 13 x 16ft. I would like to try a 12" because I love the dynamics I've heard from some 10's in there. The reason I'd like to

try this speaker design is I'm still to own a pair of speakers that are playing loud without appearing so (lack of compression and or distortion?)

If I could purchase boards with loose components then I'm a happy camper. Built is fine too!

As to the woofer. Which? Is the Eminence the only alternative to the AE TD12S? If so, then the Eminence it is. If there is something that fits in the middle somewhere in performance then I'd love to know which.

Should I be moving this conversation to email?

Cheers

Ken.

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Subject: Re: So how does this all work then..?
Posted by Wayne Parham on Mon, 09 May 2011 18:45:44 GMT
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Actually, as long as you're comfortable with it, I like having these discussions in public on the forum. It allows others the benefit of the information contained in our dialog.

The two midwoofers available for this model are the Eminence Delta 12LF and the Acoustics Elegance TD12S. The crossover has been tested and optimized for those two drivers. You can always build with the Eminence woofer, and then upgrade to the TD12S later. I realize it is fairly expensive, especially with shipping added, but I must say it's a very nice driver.

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Subject: Re: So how does this all work then..?
Posted by spacejazz on Mon, 09 May 2011 19:16:52 GMT
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Suits me to have it out in the open. I only asked with regards to keeping dollar figures in private - for your benefit of course.

The Eminence appears to be a solid foundation to build upon and are available locally. The AE drivers certainly look drool worthy - I've been eying them off for too long. I'm sure they will make a great upgrade when the funds permit (I write 'funds' instead of using her name!)

What kind of usable bottom end can be expected from the Eminence, and for future reference, is

there much more from the AE driver?

I don't expect the bottom octave and realise this is one of the compromises of using pro drivers. eff vs absolute extension (do I see a sub in the future?)

Cheers

Ken.

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Subject: Re: So how does this all work then..?
Posted by Wayne Parham on Mon, 09 May 2011 19:59:35 GMT
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The biggest difference in the Eminence and AE drivers is in the midrange, actually. It's smoother and distortion is lower because of flux stabilization rings. The bass is good either way, although all my speakers are high-efficiency designs which means they don't reach to 20Hz by any means. They have powerful bass, but you can always increase deep bass extension with subs. More importantly, using the multisub concept, you can smooth room modes. There's more information about that in the last few pages of the whitepaper in my earlier post.

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Subject: Re: So how does this all work then..?
Posted by spacejazz on Mon, 09 May 2011 20:21:52 GMT
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Right then. Between your white paper, the JBL write up and multi-subs I've retired from reading due to a knot in the brain. From this point onwards any mis-information, incorrect statements, even typo's, are directly related to this condition that seems to be occurring with rapid frequency the more I look into loudspeakers.

Does the Apollo upgrade to the AE drivers relate to the JBL article or is that purely for power handling?

A designer I will never be!

So lets talk business. How much are the xo's and how would you like them to be paid for?

Also, I'm assuming that the cabinets use 3/4" (18 - 19mm) material. I have some 16mm furniture

grade birch plywood, will this suffice with a little extra bracing?

So many questions. I'm not trying to be a pain in the proverbial... honestly

Cheers

Ken.

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Subject: Re: So how does this all work then..?
Posted by Wayne Parham on Mon, 09 May 2011 20:52:25 GMT
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You're not being a pain, no trouble at all. That's what we're here for!

And I know what you mean about the information overload! Sometimes, it can be just a bit too much. All the little details, and all for just two moving parts.

You can purchase the crossover boards (populated or unpopulated) at the Pi Speakers shopping cart. See the link for prices. You can also use the shopping cart to get shipping quotes. Just put the items in the cart and start the checkout process. It will ask your address and provide a shipping quote before requesting payment information. You can order at that time if you want but you don't have to.

The smaller wood thickness (16mm or 5/8") is not a problem but I can't say for sure that the furniture grade plywood will satisfy. It's a little bit of an unknown, in that you can never tell if plywood has internal voids or not. Some plywoods - even pretty good panels - have voids between laminates that may contain debris. If there are any voids that contain debris, it will buzz.

Sometimes, pretty often, actually, you'll build a cabinet that sounds pretty good for several months or even a year or two and then one day you notice it buzzes. You'll think you have a problem with a driver and replace it, only to find the same sound. Then you'll realize it's the cabinet. What happens is the debris is held in place with a little bit of glue that squishes into the void during manufacturing but then later, the debris breaks loose. So that's the problem with plywoods. Those voids - the debris inside, actually - makes most plywoods a problem.

One plywood product that almost always works well is Baltic birch. The laminates are thinner and the glue is more likely to fill a void, leaving nowhere for debris to move.

Onto the woofer. The "stock" TD12S driver has a Faraday ring, and the Apollo upgrade adds to that. It's mostly for thermal control.

As an aside, there are three things in play with the conductive metal embedded in the magnet. One is flux modulation control, making a sort of bucking circuit. Another is the modification to voice coil impedance. And a third is wicking the heat out of the core. All three things can be improved by putting (thermally/electrically) conductive material in the motor core. Of course, this

reduces the amount of magnetic material in the core, so you have to make that back up. But with proper placement of conductive material, you can improve flux stability, thermal dissipation and voice coil inductance linearity. The thing is, the optimum positions for the conductive material are different, depending on which of these things you want to optimize.

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Subject: Re: So how does this all work then..?
Posted by Cangaceiro99 on Mon, 16 May 2011 11:17:02 GMT
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Hi Ken,

I'm in Melbourne, just about to do build some 4 pi speakers too. I sourced de250 & 2226h. Have just to order crossovers from Wayne & source the horns from somewhere.

I thought it may be worth mentioning that essential audio in melb stock those eminence woofers, but if you're prepared to wait a few weeks, I've noticed that second hand 2226h or 2225 come up on ebay every few weeks and have been selling for about $200-250 each. That's only a little more than the stock eminence 12 new from essential audio and is how i bought mine.

I was considering td12s before that, but price of shipping makes it difficult. Wayne has mentioned that 2226h is pretty special mid woofer. From what i understand has less breakup up high.

Wayne,

Is it possible to EQ the speakers to give more bass? i will be listening at moderate levels without a sub woofer, just wondering how much EQ would be reasonable without damaging the speakers/ ruining the sound? Flat to mid 30s?

Thanks,

Paul

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Subject: Re: So how does this all work then..?
Posted by Wayne Parham on Mon, 16 May 2011 15:09:27 GMT
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The cabinet is tuned to 38Hz so you can safely boost bass down to that point.  However, it would be much better to use multisubs, because then you'll not only gain the extension but also smooth room modes.

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Subject: Re: So how does this all work then..?
Posted by spacejazz on Mon, 16 May 2011 16:22:09 GMT
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Hi Paul,

That's certainly good advice and I appreciate it. My only reservation has been with the mids, how good they sound using pro drivers - particulalrly a cheap(ish) Eminence. I'm used to Vifa, Scanspeak and over the past couple of years, smaller ~4" FR's with augmented woofers. All of the above lost out on that 'being there' sensation. I'm attributing much of this to dynamics - hence I landed here.

I will be keeping my eye's out on ebay for some JBL's as I read a quote where the TD12S were ~$300 in shipping alone

Hi Wayne,

Please excuse the abrupt ending of our discussion. My internet connection exploded, or imploded, or something... and took some days to get back on! Your crossovers are still on the cards but I'd already committed to the B&C DE250's from Pro Sound in MA.

If I purchased the xo's the same week my private parts would have been on the black market  (I'm using a smiley because they are NOT on the black market!)

Thank you for the plans. I have made cutting lists already with conversions. Is there an ideal height for the waveguide to be at in relation to the ear, eg: stand height? Also, what waveguide is it exactly?

I should clarify as I made an error in describing the birch ply I have. It is in fact void free B/BB ply, so a good face, an ok but not as good face and A graded core. Supposed to be good stuff. It's sad. I'm a furniture maker but have little idea about ply! Solid timbers however

If MDF is preferred however, that's too easy and the ply can be used for a bookcase for the missus!

Thank you so much for all your help and generosity

Cheers

Ken.

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Subject: Re: So how does this all work then..?
Posted by Wayne Parham on Mon, 16 May 2011 19:15:05 GMT
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I think as long as you have baltic birch, your speakers will sound fine.  They'll be lighter and more durable than MDF cabinets too.

will put the forward lobe right where you want it to be.

Don't put the speakers on stands unless you're running flanking subs.  If you don't plan to use subs, put the speakers on angled risers, on the ground with the front about 3" and the back about 1".  This will tilt them back and will avoid boundary self-interference.  Push the speakers all the wall back to the wall behind them too.

Subject: Re: So how does this all work then..?
Posted by spacejazz on Mon, 30 May 2011 12:58:30 GMT
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Hi Wayne,

I'm still here... and still waiting to receive an invoice from the chap at Pro Sound Service in the states

I don't suppose you'd sell me a pair of the DE250 comp drivers

I'm going to try and give the cabinets a little bit of Tannoy Prestige line character. I haven't decided which speaker yet, but if I choose one that I think may have an adverse affect I will ask you before planning. Bare in mind this is purely an aesthetic and internal dimensions will remain the same, as will driver location. I cannot see a reason for external dimensions to alter either, aside from 4mm in H/W/D due to the 16mm material.

Cheers

Ken.