Subject: Help with new design
Posted by SantinoSan on Tue, 12 May 2015 22:19:34 GMT
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OK, here is what brings me here to the Pi forums. I am in process of making a 3 way, high efficiency speaker. It will be fully active and use a mid and high horn. I have decided for now to use a SEOS12 waveguide with the B&C 250 CD. The woofer is a B&C 15NDL76. The mid has not been decided yet.

My first choice was a SEOS 24 loaded with either a Radian 745 or 951. I have the 745 in my possession, but the RCF horn I am using is introducing too much ripple. I also found out over 12k it breaks up pretty badly. I have considered a beryllium diapgram to eliminate the beakup, but they are pricey. The Radian was a chance to go two way due to its low crossover of 500hz, but I still want a three way design. So, I could still go Radian and BIG SEOS 24 and cross around 500 hz...but then I started thinking about the Parham midhorn. It will load lower, has plenty of efficiency, is much cheaper...but, will it blend? Not sure of the voicing versus a large format horn. How will the directivity match the SEOS? What about distortion? It does have the bandwidth I need as I'll likely cross it around 1.2K due to vertical spacing.

So any opinion, ideas, criticisms. Just looking for educated opinions that may help guide the way.

Thanks,
SantinoSan

Subject: Re: Help with new design
Posted by Wayne Parham on Wed, 13 May 2015 02:26:47 GMT
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I cannot advise anything that uses a SEOS waveguide/horn. Sorry, but we've been over this in the past, and I don't use the SEOS12 because the H290C is a better waveguide. There are numerous threads on the web comparing the two. As such, all my designs use the H290C waveguide instead of the SEOS12.

Subject: Re: Help with new design
Posted by SantinoSan on Wed, 13 May 2015 02:45:18 GMT
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Wayne,

I understand there was contention concerning you and a claim to have a superior horn... But putting that aside, let's just assume for our discussion I have a generic 90 x 40 waveguide.

I am asking as a potential customer how you feel your cornerhorn compares to a large format compression driver in the limited bandwidth of 300 to 1200. I know under around 500hz there is not much out there to compare as horns or waveguides for CDs that extend that low while maintaining directivity are either hard to find or boku bucks. Just really wanting to know from anyone who is familiar with both is there an advantage of a traditional CD and horn versus the Parham midrange horn and cone driver.

Additionally...does the cornerhorn with the Delta 10 require the gasket and is it additional when you buy both.

Thanks,
SantinoSan

Subject: Re: Help with new design
Posted by Wayne Parham on Wed, 13 May 2015 14:10:51 GMT
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The problem is you can't consider any horn or waveguide to be generic, because they all manifest specific characteristics and those must be accounted for in the crossover. The directivity, passsband, acoustic center and acoustic load are different for each device.

But to speak solely about the configuration - A constant directivity cornerhorn can be implemented as a two-way loudspeaker. I did that for a few years. Everything is an exercise in balancing priorities, of course. The midrange is best run pretty low, in my opinion, so it can be coupled to the boundaries at the low end and so it blends well with the bass bin. This tends to limit it on the high end, since all horns have bandpass characteristics. That's why I've usually run constant directivity cornerhorns as three-way systems like they are now.

About a comparison between compression drivers and cone midranges for large-format midhorns, each has specific advantages but I think a cone driver is clearly the best choice for the low midrange. It's a matter of displacement, something that the compression driver just doesn't have. The cone driver has larger surface area and more excursion capacity, both needed for lower frequencies.

Subject: Re: Help with new design
Posted by SantinoSan on Wed, 13 May 2015 14:35:47 GMT
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Another key concern for me, is the lack of corner loading. I will have three of these behind an AT screen. That appears to only effect the low end of the midhorn. Since they will be crossed, hopefully around 300 hz according to the frequency response you posted, to a capable bass bin.

Subject: Re: Help with new design
Posted by Wayne Parham on Wed, 13 May 2015 15:27:04 GMT
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That's an important requirement. The cone driver has more displacement by virtue of larger surface area and higher excursion capacity, but regardless of that fact, this particular midhorn really needs to be placed in near proximity to the corners. It needs that both to assist in its acoustic loading and also to assist in its directivity down low.

If I don't have the right corners, I prefer to run DI-matched two-ways with flanking subs. That configuration is the next best thing to constant directivity cornerhorns.

Subject: Re: Help with new design
Posted by SantinoSan on Wed, 13 May 2015 15:55:15 GMT
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Thanks Wayne,

My setup is as follows: 11' x 31' theater. 3' behind screen, but I have tall 2'x 2' x 6' subs hidden back there. By the nature of how my speaker area is, the two horns in the corner will be within a few inches of the side walls, and within about 15 of the back, but if I put them in the corner, the sub's will cover some of the midhorn mouth. The center channel cannot be anything but left in the middle. Does this sound like a better setup for a two way?

Thanks,
Jonathon

Subject: Re: Help with new design
Posted by Wayne Parham on Wed, 13 May 2015 18:44:41 GMT
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If I had good corners, I'd make the L/R mains a priority and use those corners. The center speaker obviously has to go in the middle but the hornsubs could go anywhere, and in fact, are probably better situated away from the mains to distribute bass sound sources throughout the room. Can you try alternate locations for the subs? Maybe along the side walls? Or maybe between the L/R mains and the center?

Subject: Re: Help with new design

Posted by SantinoSan on Wed, 13 May 2015 19:11:20 GMT
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There is no other place for the sub's. I have two in the from between the mains and center and will have 2 in the back of the theater when I finish them.

So the mains pretty much have to be as close to the screen as possible or they'll fire directly into the sub's. If the midhorn are not corner loaded how low will they control dispersion?

The other alternative is if I use the subs as sort of a baffle wall. So it would be left speaker against the left wall, sub which is 24" wide, center channel, sub then right speaker and right wall. I would use any room behind the speakers and sub's for bass traps.

Thanks,
Jonathon

Subject: Re: Help with new design
Posted by Wayne Parham on Thu, 14 May 2015 20:08:19 GMT
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Gotcha. It seems like room layout is the hardest part sometimes. But I think having the subs between the mains and the centers on the front wall and a couple near the back wall is going to be great.