Subject: New Pipedreams and woofer/driver horiz spacing...
Posted by darkmoebius2 on Wed, 19 Aug 2009 00:09:05 GMT
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As I understand it, from Dr Griffin's white paper(pg 16) the woofer and tweeter line C-to-C needs to be "less than a one wavelength at the crossover frequency." Quote:While the vertical separation of the drivers in each line of the line array plays a significant factor in the performance of an array, the horizontal spacing between the two lines needs to be minimized to reduce image shift as the sound transitions between the woofers and the tweeters. The design is essentially the same as if you designed a two drivers (woofer/tweeter) speaker that is placed horizontally. Care must be paid to minimize horizontal lobing from the side-by-side drivers. Some things to consider are the basic horizontal dispersion of the individual drivers that would ideally be similar and overlap to at least 30 degrees off axis. The two lines need to be located so that their horizontal center-to-center distance is less than a one wavelength at the crossover frequency. Finally, a higher order acoustic crossover may be necessary to minimize any driver interaction above and below the crossover point.
Yet, these latest pictures of the new(er) generation Pipedreams shows separate mid/HF towers seemingly much further apart than that. Any ideas how they get around the resulting issues? (I notice they now offset the tweeters in the horizontal plane for time alignment)

I'd also like to get people's input on how Selah Audio's Symmetrica array with two mid/woofer lines sandwiching the ribbon line avoids the standard line C-to-C spacing rule. Does it not apply in the horizontal plane for lines of the same freq repsonse?

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by Eric J on Wed, 19 Aug 2009 13:12:48 GMT
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Its hard to say.....

When you are selling your product for $44,000, people tend to overlook the fact that you've violated a lots of physics and having spent more money than for a luxury car or a small house, that it doesn't really sound as good as it should.

My experience is that people pay no attention to research in speaker building. They just do what they want.

I spent 18 months researching every aspect of the design for my line arrays from the exact amount of insulation needed in the construction, to the tubes used for the midrange enclosures to everything. My system works as a synergy, it would not do as well if I just took the speakers and dumped them in a big box. But most people just do that, so they don't understand the synergistic concept, nor are they willing to take the time to do so.

They have to try it out for themselves, despite the fact that there is plenty of real research that tells people exactly what works, what doesn't work, and why.

Eric J.

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by darkmoebius2 on Fri, 21 Aug 2009 04:10:34 GMT
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Eric J wrote on Wed, 19 August 2009 08:12people tend to overlook the fact that you've violated a lots of physics...that it doesn't really sound as good as it should Well, I'm not sure it's fair to say that the Nearfield Acoustics guys don't have a firm grasp of the physics involved in speaker/array design.

Quote:Mark Porzilli, a former child prodigy, was able to wire simple circuits and draw schematics at age 5. He completed a masters level education in Physics, Quantum Mechanics and Chemistry at age 14, after winning a national competition to miniaturize electronic circuitry for Bausch & Lomb at age 12. That same year, he designed biofeedback electronics for several New Jersey hospitals, and entered two state science fairs, winning first place in both.

George Bischoff studied at the renowned Berlin Technical Institute. He designed with Mark Porzilli and built the first American ribbon line-source speakers, using the legendary Strathern ribbons from England, which garnered accolades in the pages of Stereophile magazine in the 1970s and early 1980s.

Mark designed all of Melos Audio's solid state and vacuum tube products with George Bischoff from 1979-1999. He is also the designer of the original, award winning Pipedreams Loudspeakers. He is the designer of the new Scaena Line Source Loudspeakers (RLA), rave reviewed by Harry Pearson in The Absolute Sound, January, 2008: www.scaena.com.

And I don't think even Dr Griffin would claim his white paper is the end-all, be-all to everything regarding line array design. I view it more as a primer on the subject for lay people that distills the far more technical analysis in it's reference papers. So, simply because the paper doesn't specifically address the design features found in both examples I provided, doesn't mean that they are not technically valid.

Rick Craig, designer of the Symmetrica array, responded on his Selah Audio forum at Audiocircle: Quote:The spacing of the two woofer lines is important because it effects how they couple around the crossover point. The wavelength rules are affected not only by the woofer diameter but also the driver's dispersion. Not sure I have the slightest idea what he's getting at, but it does give me some homework to do.

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by Eric J on Fri, 21 Aug 2009 21:45:48 GMT
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Both of these speaker systems are completely proprietary. You do not know what speakers they used, what the crossovers are or how they are configured, or how the boxes are constructed.

In Rick Craig's case, I'm sure his system works great. When I put mine together and posted it here with 16 -3 inch midranges per side, he seriously questioned it, particularly the use of the 3 inch midranges. Dr. Griffin chimed in that he would have preferred ribbons to my dome tweeters but that it should work beautifully, since i followed his paper to the letter. And it does!

Amazing that it wasn't too much later that he produced a kit very similar to the system I designed. Imitation is the greatest flattery. I wish he'd gone to the electronic crossovers and tri-amplification as well as complete separation of each mid range speaker from its peers, but that would have required a much larger building process, and lots more expense.

My main point is that without these proprietary builders telling us exactly how they built them(Rick Craig is partly excluded from this since he and Dr. Griffin are good friends and he tends to take Dr. Griffin's research literally), we are relying on how smart they are. After 60 years of being taken(and not taken) for a ride by smart people who do dumb things, I'm not willing to buy something expensive simply because they were made by someone who talks about how smart they are.

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by darkmoebius2 on Tue, 25 Aug 2009 21:39:28 GMT
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Eric J wrote on Fri, 21 August 2009 16:45After 60 years of being taken(and not taken) for a ride by smart people who do dumb things I can't really argue with that thought, too many examples to prove it right!

I need to drive an hour or so north of where I live to a dealer who has a set of (supposedly) vastly improved Pipedreams clones for sale. Quote:I was the West Coast Pipedreams rep for several years. We used Pipedreams on three different occasions at CES when I was the GamuT importer. Ole Lun Christensen was at my house after the recent CES. He agrees that the Tonian Line Array's are better than any Pipedreams ever made.

I contracted Tonian Labs to take the best of the Pipedreams design and eliminate the flaws.... The

major flaws of the original Pipedreams are as follows; electronic cross-over the cross-over designed for Nearfield had problems, most hummed.
(That is why they contracted us at GamuT to design a new unit for them) Second, they used cheap drivers The tweeters and woofers were off the shelf units.

Tonian Labs has used some of the best drivers available for our design. We used the Seas tweeter 30k plus and the Audax top of the line air-jell woofers. It would interesting to hear how these sound. (not that I could afford them)

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by Eric J on Wed, 26 Aug 2009 02:12:30 GMT
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The Tonians look like mine, except.....

They are using wonderful Audax Aerogel's which list for $81 each. assuming they can get them for 40 each in large quantities, and they are using 30 of them total, that's just $1200 for the mids. They will be OK in Comb distortion if they cross them no higher than 2500hz. Lets assume that they do.

The problem is the SEAS Prestige 27TFFNC/G(31 bucks each at retail). These are 2.08 inches apart bumper to bumper. If they were able to make them only .80 inches apart then comb filter distortion would start at 17Khz, but at 2 inches it starts at about 6600 hz. This is clearly audible.

Why they would do this when they could simply buy a set of B & O ribbons and not have the issue is beyond me.

If you put my system or one of Rick Craig's system next to it and listened to the upper range you would clearly hear a difference in lack of air. Listening by themselves will probably be overwhelming with those fabulous aerogels.

They can do what they want, but unless Dr Griffin really fudged his research for some reason, I'm not suggesting in any way that this is true, and actually agree with him 100%, these people are ripping you off because they don't want to spring for a tweeter at the same price range as the mid range they are putting in.

Eric

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by darkmoebius2 on Wed, 26 Aug 2009 04:39:50 GMT
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Eric J wrote on Tue, 25 August 2009 21:12Why they would do this when they could simply buy a

set of B & O ribbons and not have the issue is beyond me.
I guess that just goes to prove your earlier point - Smart people can do very dumb things when someone else is paying for it

BTW, where can I get a look at the specs on the Audax midwoofer they used in the Pipedreams clone?

Here's another one you'll love, Eric: Sound Science Line Array One tower wave guide only $16k($7,500 used). Quote:These are my prototype Line Array speakers with the worlds first columnar wave guide design.

They are 7.5' tall with 16 each 5.25" full range drivers. The Cabinet is made from cabinet grade MDF with a beautiful walnut veneer.

They are a dipole radiator as well. The net effect is a speaker that broadcasts a column of sound which only grows in the direction of travel at the speed of sound.

This means that if there are no physical objects between you and the speakers that you do not hear any reflected sound from the side walls, floor or ceiling until after the direct sound has bounced off of you. In a reasonable sized room your brain will ignore the reflected sound. This results in astonishing imaging.
The dimensions of my wave guide are such that it completely controls directivity down to 200 Hz and the dipole design takes care of 200 Hz and below.

I cross them over to 15" woofers at 100 Hz and use the DEQX
PDC 2.6P to correct for frequency response and as the electronic crossover between the 15" Subs and the Line Array towers.

By using the DEQX we get the desired frequency response at the listening position, 20 to 20K

Subject: Re: New Pipedreams and woofer/driver horiz spacing...
Posted by Eric J on Sat, 29 Aug 2009 00:05:29 GMT
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I can't imagine how they couldn't lose the high frequencies when comb filter distortion starts kicking in a 6000. The guy looks my age so maybe he has no hearing from Vietnam.
