Subject: Horns vs Arrays
Posted by Gilipsie on Wed, 05 Dec 2007 15:52:26 GMT
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Could someone tell me he pros and cons of horns verses arrays? I know they aren't mutually exclusive but I'm talking home use and I think a horn array would be too big for my home. Comparing an array of regular cone or ribbon drivers with a 2way or 3way horn speaker, what are the advantages and disadvantages of each?

Subject: Re: Horns vs Arrays
Posted by Marlboro on Wed, 05 Dec 2007 20:55:21 GMT
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Question for you:What horns would you be using, in what configuration?Marlboro

Subject: Re: Horns vs Arrays
Posted by Gilipsie on Thu, 06 Dec 2007 14:19:49 GMT
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It's really a hypothetical question although there are plenty of home hifi horns to choose from. What I am looking for is the strengths and weaknesses of each one to know the differences of each general category rather than a critique of any specific design.

Subject: Re: Horns vs Arrays
Posted by Marlboro on Thu, 06 Dec 2007 16:02:03 GMT
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Other than high sensitivity, a three way horn system is pretty much the same as a point source with cones. The problem is that high quality sound with horns is very difficult to design properly, and often results in a horn sound which is great if you only listen to wood-winds or brass, but can be difficult with other types of music. And quality horns are not only very very expensive, they are difficult to find. Additionally they are not known for their flat frequency responses.A cone line array isn't plagued by the concerns above, and in addition:The major benefits are as follows:1. Frequency response dips and bumps tend to smooth out. And because there are some many of the speakers, each speaker may have limited output in the upper treble or the lower bass, but all speakers put out something in those areas. If you put enough of them together you can actually get some decent response in the areas even if the individual speakers don't have much to give.2.

All arrays whether with really cheap speakers(49 cent for example) or expensive($49 for example) have decreased distortion. Decreased distortion increases airiness, openness etc. Power handling goes up dramatically. 32 dome tweeters might give you a 450 rms watt per channel protection. With each speaker handling only 3% of the total speaker load, its very difficult to overload them and cause distortion.3. All arrays have vastly increased dynamic range and increase sensitivity. 4. Size: One of the benefits of an array is the coupling of the speaker to the ceiling and floor. 5. They may not need a sub woofer, or even a woofer to play deep. A combination of 12 – 7 inch mid woofs have a huge amount of bass, with very low distortion.6. Sound dispersion and sound stage. Arrays produce a level of sound stage and sound dispersion that just has to be heard to appreciated. Array sound presents in the near field.7. Because array sound represents in the nearfield(as opposed to the far field for all point source speakers), the concept of reflections from walls and floor is almost non-existent8. Baffle compensation distortion is reduced to less than 1 db when the numbers of speakers in a line exceed 15.Disadvantages.1. They can be expensive. Even an inexpensive array is going to cost around $500 - 700 for the speakers, plus the building. An expensive one might cost as much as $2000 just for the multiple speakers, and the whole system a lot more when you add the amplification2. They often require extra amplification and electronic crossovers since its hard enough to build a quality passive cross for a point source. Its harder for a passive design.3. The cabinetry is long and can often be a nightmare with the number of enclosures and holes that have to be cut.Marlboro

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Subject: Re: Horns vs Arrays
Posted by Duke on Mon, 10 Dec 2007 05:56:38 GMT
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I'll take a shot at pitching the horn side of things, as Marlboro has done a very good job of describing the advantages of a line array.Let me preface by saying I haven't built a modern line array, but I did build a few based on a widerange planar magnetic driver back in the 80's. I currently build horn systems.Now note that some of the general statements about horns do not apply to high quality horn systems such as what Wayne offers. Over the years there have been many harsh and fatiguing horn systems, so if we talk about the "average" horn system it's probably not something you'd be interested in. But a high quality horn system is capable of combining lifelike dynamics and natural timbre of voices and instruments better than any other reasonably-priced format - at least in my opinion. From my point of view the most valuable characteristic horns bring to the table is radiation pattern control. All direct-radiator drivers are omnidirectional or nearly omnidirectinal at low frequencies, and their radiation pattern narrows (beams) as we go up in frequency. This results in relatively more energy going out into the reverberant field at frequencies where the pattern is wide than where the pattern is narrow. So with conventional speakers, the reverberant energy will have a different spectral balance than the direct sound. Note that live instruments generate a reverberant field that has very close to the same tonal balance as the direct sound (a live piano still sounds like a piano when you're in the next room, where all you can possibly hear is the reverberant field). Because a horn controls the radiation pattern of the driver, with a well-designed system there is little discrepancy between the spectral balance of the direct and reverberant energy. This contributes to natural-sounding timbre. The 7 Pi cornerhorn is an example of a speaker that has this characteristic - it has excellent radiation pattern control, and sounds very natural and realistic even from the next

room.All that being said, one of these days I'd like to attempt a speaker that combines line-source-propagation characteristics with the radiation pattern control of a good horn system. Some custom components would be required, and I'll have to make a lot more money before I can afford to have them fabricated for me.Duke