Subject: Damping material placement
Posted by doucanoe on Thu, 01 Sep 2011 14:25:23 GMT
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I was wondering what you recommendations are for fiberglass lining of the walls in the 4pi using the 2226. Which walls, thickness of batt material, etc.

If it matters, I constructed my pair using a 2.8-3 cu-ft LF sub enclosure tuned to 38 Hz for the 2226. Although I'm pretty darn pleased with the LF performance, I do believe I may have the enclosures a little over filled.

My original plan was to go a little heavy initially then reduce and note the changes. Then, settle on what I thought sounded best. Things sounded pretty good right from the get-go so I never made any changes. It's been a while so I would have to pull a driver to even tell you how I went about lining the cab.

I've tried to do some searching for the answer here (I'm sure you have addressed it a million times by now) but having a little difficulty finding anything that speaks to it directly.

Thanks,
RC

Subject: Re: Damping material placement
Posted by Wayne Parham on Thu, 01 Sep 2011 15:32:32 GMT
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I use R13 (which is about 3" thick) on the back, top and side nearest the port. I also use a sheet that spans the cross-section, glued on the brace between the woofer and tweeter, which is also between the woofer and port. Honestly, this is probably the most important sheet. It does a great job of damping internal standing waves that would otherwise cause some lower midrange ripple.

This has been discussed on the forum, although I'm sure it is lost in the thousands of posts. It is mentioned in the plans.

Subject: Re: Damping material placement
Posted by doucanoe on Thu, 01 Sep 2011 16:33:44 GMT
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I recall reading about your recommendations for this but with my cab(s) being a little different when about it based on what I thought made sense at the time. What that was, I don't recall exactly. Old age I guess

The differences being that horn and woofer do not share the same space in my cabs. Also, I went with a rear porting arrangement. I would imagine that that same plan would apply though.

Now I just need to pull one of the woofers and see how I went about it.

Thanks Wayne!

RC

Subject: Re: Damping material placement
Posted by Wayne Parham on Thu, 01 Sep 2011 18:19:35 GMT
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I hate to say it but with all those mods, all bets are off. However, insulation spanning the cross-section is a good idea in general for large cabinets used into the midrange. It helps damp standing waves at midrange frequencies where insulation lining the walls can't. But the best position to put the cross-section piece and the best positions of woofer and port are best found by extensive modeling and/or empirically by measurements.

The goal is to prevent standing waves from lining up in the box in the 100Hz to 400Hz range - above that and the insulation lining the walls will attenuate it. Below that, the Helmholtz resonance and woofer parameters are setting the curve.

The 100Hz to 400Hz range is tricky to deal with in larger cabinets the size of these, because it's right where the standing waves line up and yet the insulation lining the walls cannot do much. So you have to put the woofer and port in positions that prevent large peaks in that range, and use a section (or two) of insulation spanning the cross-section to damp what's left.

The position of the insulation is also important, because it needs to be where the standing waves are at energy maximums do do the most good. That's why the insulation lining the walls is almost useless at midrange frequencies, it's right at an zero-energy point. At higher frequencies, it's thick enough to span from the zero-energy out to a place where the wave has some energy but at lower frequencies, it's too small acoustically. So to help with that, we must space the damping material out away from the walls.

Subject: Re: Damping material placement
Posted by doucanoe on Thu, 01 Sep 2011 19:50:59 GMT
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I'm going to have to dig up my old 4pi plans and see where you located the cross section piece. If anything else, it will provide a point of reference.

RC

Subject: Re: Damping material placement
Posted by Wayne Parham on Thu, 01 Sep 2011 19:55:32 GMT
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It sits on top of the cross-brace, which is to be placed between woofer and tweeter. That puts it about 2/3rds the way up from the bottom of the cabinet, in between woofer and port.