Subject: internal pressure
Posted by JP Haggar on Tue, 10 Oct 2006 04:37:06 GMT
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Just how much pressure is there inside a ported line array enclosure with eight 7" drivers? is 3/4" MDF enought to handel it ? I've just finished building Rick's RS 8 array and tested the sides and back panels with a stethoscope and god I have so much vibration in those , at some frequencies they emit as much as the drivers themselves.Any recommendations ? I'll go as far as rebuilding the enclosures with more bracing than the recommended vertical bracing .I know Rick's curved back panel enclosures are much stiffer than the square box , can we obtain the same stiffness and damping with bracing or double panel and sand filling(why bother with weight they are already very heavy)for a rectangular enclosure?thanks JP

Subject: Re: internal pressure
Posted by Anonymous on Tue, 10 Oct 2006 16:32:27 GMT
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You will find a million recipes on cabinet deadening that confuseseveryone. The basic rule is: A heavy wooden box well braced gets youcloser to the goal of making a dead cabinet.You can do whatever you want to achieve this goal. Thick wood,tiles on the inside, sand, concrete, composites, kitchen sink.The problem is easy to solve when you are building a small speaker box as you don't care if the speaker box weighs 50 - 100pounds. When building a line array, it's a hard pill to swallowthat you might need a 500 pound cabinet to solve the problem toyour satisfaction.You need to find a compromise, weight vs. performance. It's yourcall.The problem is easily solved with 1.5" thick MDF cabinet walls +internal bracing. You need excellent bracing methodologies andyou can use plywood bracing to keep it lighter, but still a very heavy box.Replace the 1.5" MDF with 1.5" plywood and you cut your cabinetweight in 1/2, but performance is also reduced, catch 22.A hybrid 3/4" MDF + 3/4" plywood is another choice, better performance than 1.5" plywood, but not as good as 1.5" MDF.http://home.pacbell.net/lordpk/robarray/Rear_chamber-2.JPGExample; This line array is 3/4" oak plywood. Four isolated chambers, 3 pieces of wood to make those chambers and tobrace the cabinet. To keep the weight down and to makea dead box, I installed smaller 12" x 12" pieces of 5/8" MDF toevery wall in each chamber except the front baffle. I could haveused 3/4" + 5/8" lamination but I chose this method to trim weight.After the build, the hammer test revealed that each chamber can be improved as the ringing wasn't as good as I wanted. To solve this,a 1" dowel was inserted in each chamber to couple the left and rightsides of the cabinet.I don't see any reason to use sand, or to add tiles because in the end, the cabinet will be heavy and to get a heavy cabinet youcan just start off with thick walls with bracing and the constructionproject becomes easier. Fine tune the cabinet later with dowels orwhatever piece of wood.

Subject: Re: internal pressure

Posted by Jim Griffin on Tue, 10 Oct 2006 18:28:40 GMT
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JP,I'm not from the double thickness wall box school (a double thick baffle would be appropriate) but you can get by with a single 0.75" thick wall on the sides, back, etc if you design the enclosure correctly. The secret is to partition or brace the box so that you minimize the wall pressure and length of any unsupported wall. What I do with my line arrays is to partition so that I have full width and depth shelves between every pair of drivers (I'm thinking 4",5", or 6.5" drivers) . For a six foot high box I'll use a shelf every 12 inches so you'll have support within the box. If the box is more than 12 inches deep, I would suggest vertical braces to support the internal panels between each other and the top and bottom of the enclosure. Thus my rule is to have bracing or shelving for no more than a 12 inch width or depth for any unsupported panel.Bottom line is to design your enclosure like an iron bridge--lots of partitions and braces and you'll be good to go. None of my line arrays boxes don't have vibrational or any box talk issues. Jim

Subject: Re: internal pressure
Posted by JP Haggar on Tue, 10 Oct 2006 22:09:41 GMT
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JimWhat is your argument against double wall with sand ? is there a technical disadvantage apart from weight? If I use 1.5" MDF vs 1/2 MDF 1/2 sand 1/2 MDF I calculated that I would have about 15 Kg more per enclosure on a total weight of 90 KG before sand ! of course the bracing is intensive , eight horizontal sheves one between each driver, but depth is 41 cm , should I divide the depth too or would angled corners 2"x2" do the job?JP

Subject: Re: internal pressure
Posted by Jim Griffin on Tue, 10 Oct 2006 23:42:55 GMT
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JP,My point is that by partitioning the box you spread the load thoroughout the volume. So my point is that you really don't need the double thick box walls if you have enough braces. The added mass just makes your enclosure heavy and hard to move. Now nothing is wrong if you wish to build the ultimate box but just make sure that you have plenty of help moving it into place. I'm just thinking that you are going to an overkill situation vs. a good enough solution. Your angled corners should work to disperse the load among the structural elements in the box.Jim

Subject: Re: internal pressure
Posted by JP Haggar on Wed, 11 Oct 2006 14:32:06 GMT

ThanksOnce you get the cabinet dead sounding , there remains the standing waves ? I was thinking of using 2" standard 1lb ft3 and line the back and sides , then fill the rest with polyester fibers (the standard one used for upholstery) like the picture of your array , leaving some breathing space for the air behind the drivers to the port .JP

Subject: Re: internal pressure
Posted by Anonymous on Wed, 11 Oct 2006 16:14:21 GMT

>>Once you get the cabinet dead sounding , there remains the>>standing waves ?Dead cabinet - to reduce wood vibrations that color the sound.Echo - Have you ever been in an empty room and talked? Echo.Make a small box and stick your head partway inside, make a loudburst of sound, you hear echo. This echo needs taming with the fibermaterial that you install inside the box to reduce that echo thatsmears your sound.Audio is simple. Hammer to test dead cabinets, your head insidethe box to 'test for echo'.http://www.amazon.com/Test-Echo-Rush/dp/B000002JAI.. LOL ..