Subject: My weekend 4Pi Speaker Build
Posted by esoren on Mon, 18 Jul 2016 04:02:10 GMT
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I just finished building a pair of 4Pi speakers. They sound great and I am really pleased with how they sound. Thanks to Wayne for providing the plans! I greatly benefited from some of the other build logs I read online, so I want to post one in case it is helpful for others as well.

I still plan to sand/finish/veneer them in the future. I am trying to decide what veneer or finish to go with. I also still need to build some stands.

I will break this post into multiple parts and continue updating as I continue to work on the speakers.

The first step was to model everything in CAD and render to get a feel for the size. I am also working on an Oddwatt tube amplifier to accompany the speakers, although I will probably post details about that in a separate forum. I'm hoping the Oddwatt and the 4Pi speakers will be a good match.

File Attachments
1) Screen Shot 2016-07-17 at 8.55.46 PM.png, downloaded 4164 times
2) Screen Shot 2016-07-17 at 8.55.35 PM.png, downloaded 4154 times

Subject: Re: My weekend 4Pi Speaker Build
Posted by esoren on Mon, 18 Jul 2016 04:30:11 GMT
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Next I worked on the crossovers. I bought all the parts on Mouser. I got two 10uF capacitors cheaper than one 20uF capacitor so I wired them in parallel.

I bought the H290C horns from Wayne. The build quality is nice and I was pleased with the construction. They definitely need to be sanded to remove the parting lines from the mold. I sanded them with 800 grit sandpaper and painted them with semi-gloss black. Unfortunately, the paint got very scratched during the build as I was test-fitting the horns, so I will need to re-sand and paint.

I cut the holes for the speakers with a router and a jasper circle cutting jig. Super easy and highly recommended.

Unfortunately I don't have great pictures of it, but I made a jig to create the cutout for the horns. You can see it a little in the second picture. It was basically a big rectangle that I could run the router across. The hardest part was getting the jig centered. I routed the corners by hand, using a larger bit (3/4") helped a lot.

The port holes were the easiest part. I glued the port to the back of the front baffle and used a flush cutting bit on the router to cut out the front panel. I got the idea from someone else who did the same thing. I really like how they turned out.

End of day 1, they are starting to look like speakers!

Finishing touches. I added insulation to the bottom and back, also.

First listen.. Uh oh. Something isn't right. Mids were screwed up. A quick review of the schematic showed I had accidentally wired the B&C250 out of phase.

After fixing that I was really, really happy with the performance. I brought a measurement microphone home with the intention of taking some measurements, but I got lost in listening to music and decided I didn't care.

I do think they will benefit from 1-2 nice subwoofers to improve the bass extension. I was already planning for that.

4 Pi next to an overnight sensation for comparison. These speakers are BIG!

File Attachments

Subject: Re: My weekend 4Pi Speaker Build
Posted by Wayne Parham on Mon, 18 Jul 2016 16:00:47 GMT
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Very cool build. Thanks for posting your progress!

I recommend OddWatt amps for these speakers, and I've showed with them at LSAF many times. It's a great combination.

You did the same thing with your waveguides that I do in my personal builds. I like to smooth them with fine sandpaper and paint them with black enamel too.

As an aside, isn't it amazing how different the sound is when the compression driver is connected reversed? You should see the measurement - the hole is quite obvious.

Be sure to run flanking subs. Not only to increase extension but to smooth the upper midbass and lower midrange. You can really hear the difference in the throaty part of a deep male voice, cello and other things in that frequency range.

Subject: Re: My weekend 4Pi Speaker Build
Posted by blvdre on Tue, 19 Jul 2016 00:06:58 GMT
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Very nice build! You also may want to review Wayne's instruction for lining the cabinet with insulation for guidance. I believe the recommendation is the back panel, the side closest the port, and the top, but don't trust my memory. It can be a bit unreliable