Subject: Re: Heat exchanger effectiveness
Posted by Wayne Parham on Mon, 17 Jul 2006 07:27:50 GMT
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The links below have several links within that show various tests, setup conditions and results. I've taken measurements at several power levels and durations, and the power levels and temperatures are shown for each. You'll find temperature/power/time measurements in the links in the post called "Heat exchanger effectiveness" (from this thread), as well as a destructive test that sets a baseline for a stock LAB12 without a heat exchanger.
Hornsub shootout results
Heat exchanger effectivenessI'd also like to draw your attention to the response charts for the

exchanger. That will show you a comparison of electro-mechanical shifts. Refer to the response

changing very little at any power level. Now look at some of the other horns (that didn't have a heat exchanger) from the "Hornsub shootout results", and you'll see their response curves shift. This is particularly noticeable at low frequencies where Qes increases, making a corresponding peak in LF output, and creating a small bass shelf. This is an indication of electro-mechanical parameter shift on the unprotected drivers.

I think the most important thing is how the speaker acts in regards to response and compression, and the fact that it is able to safely handle more power for extended periods of time. Electro-mechanical shift is visible in the response curves at various power levels, seen for example in the test datasets from the Prosound Shootout. The increased DCR value is what causes the response shift and thermal compression when the driver is pushed hard at high power levels.

I'm in Austin right now, and so I'm not where I can run any additional tests or look through my notes right now. But I'd be happy to provide more information when I'm back in Tulsa if you need more data. One of the datasets I measured was DC resistance, another was power/time and another was temperature, so I would be happy to provide this information in whatever format you'd like. Leland Crooks has also done similar testing, using a cooling plug heat exchanger on an HL10 driver. His test results included temperature, DC resistance and Qes, as I recall. I think he has them in an Excel spreadsheet or something so that may be interesting for you. Hopefully he'll see this and post a link to his data here.