Subject: OT acoustic trap - help
Posted by JLapaire on Mon, 28 Mar 2005 18:14:34 GMT
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This isn't speaker-building per se, but it's an acoustic enclosure and I'm hoping you guys can help.I've got 40+ small blowers in the cleanroom that are used to cool a motor by pulling room air through the motor. They're spec'd by the mfr and I can't change them. At the air output end they scream at 2643hz (recorded on my mp3 player and run through TrueRTA), and since the sound was driving everyone nuts, we vented them out of the room. The problem is this: With that much air leaving the room I'm having trouble maintaining temp, humidity, and pressure in the room.I want to build a small acoustic trap to go on the output of the blowers to kill that frequency without adding back pressure or costing much and I thought that a small tuned enclosure might do the trick. I can't use fiberglass batting or anything that would particulate, which includes wood, but I could model it in wood.The blowers put 50cfm each through a 1.25" opening.Thoughts?Thanks, John

Subject: Helmholtz resonator
Posted by Wayne Parham on Mon, 28 Mar 2005 19:31:29 GMT
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Add a Helmholtz resonator, which is just a chamber hanging off the side of the duct. That will form an acoustic band-stop filter, which you can set to the offending frequency by the dimensions of the chamber and the connecting passage.

Subject: Re: Helmholtz resonator
Posted by JLapaire on Tue, 29 Mar 2005 16:52:33 GMT
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Thanks Wayne,I printed that paper and am reading through it. I think that what I want is there, but I'm going to have to work on the math - it's been a while.I'll let you know how it goes.John

Subject: Follow-up
Posted by JLapaire on Wed, 13 Apr 2005 14:01:22 GMT
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It took 8 or 10 tries to get dialed in, but I finally got the suckers nailed. Picture a 5" square piece of plywood with a 1.5" hole in the middle, then a 1" slice of 4" PVC pipe, then another piece of ply

with hole. Exhaust hose runs in one side, another comes out the other side - with a 44dB drop at the target frequency! Magic. One minute you've got an annoying high pitch scream, the next minute there's just a quiet Woosh of air.Now to come up with a shop-ready version that looks decent, then make 44 of them.Thanks Wayne, that article provided a good launch.John

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Subject: Good Job!
Posted by Wayne Parham on Wed, 13 Apr 2005 17:22:46 GMT
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I love to hear success stories like that.
