View Full Version : RT60 calculation web app

threedb 10-25-11, 11:22 PM

Hi all,

I hope you'll consider trying my RT60 calculation web app the next time the need arises. Its been a pet project for some time now, and I'm glad to have the first version (nearly) complete. You'll find it more elegant and powerful than a traditional spreadsheet and certainly more powerful than the calculators on the first page of Google results.

It calculates Sabine, Fitzroy, Eyring, and Arau-Pruchades equations simultaneously, suggest RT goals based on application and room volume, has a database of about 400 finishes and mount types (and growing), and allows dynamic ranging of occupancy (very cool). Register to save or export CSV.

You can find it at http://threedb.com/rt.php. If you enjoy it, you can show your appreciation by googling "rt60 calculator" and bringing it to the first page (presently top of the 3rd page).

The calculator is a pet project and has no ads. I am an acoustical consultant in the US. I'll probably add some helps for newbies in time, but is presently geared toward professionals. For most small rooms, consider the Eyring equation to be most accurate, but be aware any RT predicition is just a best guess.

If you have any questions, comments, or feature requests, reply here or email me at rdmiller@gmail.com.

Best regards,
Rob

PS. IE is not supported. Best experienced in Chrome or Safari.

Brad Horstkotte 10-25-11, 11:30 PM

Doesn't work on IE, Chrome or Firefox (Windows 7).

BIGmouthinDC 10-25-11, 11:50 PM

worked on my Firefox (Windows Vista)

threedb 10-26-11, 12:01 AM

Doesn't work on IE, Chrome or Firefox (Windows 7).

Brad, it should work on Chrome or Firefox. Its been tested on XP. Are you getting the "Unsupported Browser" page on all three browsers? Be sure you're not copying and pasting the ie.php page into FF or Chrome.

Best,
Rob

localhost127 10-26-11, 07:38 AM

unfortunately, RT60 is not relevant in small acoustical spaces.

RT60 requires a reverberant sound-field - of which is not developed (within the audible range and above the noise floor) in an acoustically small space.

http://www.hometheatershack.com/forums/home-audio-acoustics/12027-appropriate-replacement-rt60s-sas.html

To reduce the distinction to its most basic functional charactrisitc, a large acoustical space features a developed statistically random reverberant sound field where reflections at any location are equally probable to radiate from any direction. Conversely, a small acoustical space LACKS a statistically random reverberant sound field where reflections at any location are equally probable to radiate from any direction – and instead is DOMINATED by focused specular reflections which are definitely identifiable as discreet phenomena as energy vectors with both direction, intensity and a discreet time of arrival, while their intensity decay and their distribution in regards to their arrival time can be measured and all of these characteristics easily identified and isolated via such measurements as the envelope time curve (ETC).

The RT60/30, etc. are ONLY suitable to measuring the decay time of a statistically random reverberant sound field the occurs in a Large Acoustical Space. In such a field, not finite atomistically identifiable reflections exist. As such, as they fail to apply to the physical behavior, they have no place in the Small Acoustical Space.

If one only has a hammer, all of the world begins to look like a nail, and that is precisely what has happened to the mis-application of the RT60 over the years! Instead, the newer proper tools that accurately identify the real phenomenon in the small acoustical space, such as the envelope time curve (ETC), and its variates such as the the TEF PEQ that allows one to quickly and accurately isolate and resolve each significant specular reflection into its 3space coordinates allowing for the easy and precise identification of the reflective points of incidence.

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threedb

10-26-11, 08:17 AM

RT60 is not relevant in small acoustical spaces.

RT60 requires a reverberant sound-field - of which is not developed (within the audible range and above the noise floor) in an acoustically small space.

Localhost127, I won't disagree with you, particularly in a very small room. Perhaps there is some value though in going through the calculation to verify the balance of sabins through the frequency bands for a space. We must also remember that test data is provided between 125 Hz and 4 kHz so the calculation is not so interested in low frequency, which certainly wouldn't be fully developed in small rooms.

Rob

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localhost127

10-26-11, 08:38 AM

Localhost127, I won't disagree with you, particularly in a very small room.

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We must also remember that test data is provided between 125 Hz and 4 kHz so the calculation is not so interested in low frequency, which certainly wouldn't be fully developed in small rooms.

Rob

are you insisting that RT60 is at all relevant in a small acoustical space between 125-4khz?

could you clarify what you mean when you say "LF isn't fully developed in small rooms" ?

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dragonfyr

10-26-11, 09:30 AM

Such tools are useful in large acoustical spaces, but not in small acoustical spaces.

The use of statistical math to calculate a reverberant soundfield which by definition exhibits uniformly distributed homogeneous behavior is simply not appropriate in a space that is literally dominated by regions of low and high pressure modal peaks and nulls below about 300 Hz; and by direct and indirect focused specular energy where the energy distribution is unique at every point in the room is the exact opposite of a 'uniformly distributed homogeneous soundfield'.

Thus we use the waterfall/CSD response to indicate modal peaks and nulls, and the ETC response to indicate the specular arrival of energy - be it a region with high gain reflections, or a position that is sparse - or lacking in significant energy arrivals.

The fact is, what little reverberant soundfield that exists in a small acoustical space is only present at the Very high frequencies exhibiting very small wavelengths, and this has very little energy content and is easily absorbed by almost any object in its path. Its energy level is so low that its gain remains below the ambient noise level of he room, and as such is inconsequential.

But in any case, in a small acoustical space, we address each position on the basis of its local behavior, not on the basis of an effectively non-existent homogeneous soundfield the is more properly addressed if one is dealing in a large acoustical space.

Oh, and if one wonders "how large" is such a "Large acoustical space" required to support a reverberant soundfield of a very modest RT60=1.6 seconds?

From Manfred Schroeder's formula: If we consider content above 80 Hz: 35,313 ft^3; and for 30 Hz: 251,116 ft^3...

Thus, I don't think anyone need worry as to whether this will effect them!:D

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threedb

10-26-11, 09:31 AM

localhost127,

Calm down. The main point of my previous post was that there may be some benefit in quantifying the balance of sabins across frequency bands in small rooms, irrespective of an RT goal. Some people around here may find use in that.

The (in)validity of RT in a small room is a well argued subject, as noted in your previous links and quotes. And all bets are off around and below the Schroeder cutoff. I will not argue that further.

The calculator is intended for auditoria, (diffuse fields, etc), as you will see from the "audience areas" section of the calculator.

More features are planned for the calculator. You can expect to see cautions and warning messages to avoid misapplication of the formulas. Likely will be when a room is under a certain volume or beyond aspect ratio to name a few.

Best regards,
Rob

BIGmouthinDC

10-26-11, 11:48 AM

About RT60

"I try to keep it in the range of .35 to .40" (seconds)" - Dennis Erskine

The concept was discussed in this thread from 2003
http://archive.avsforum.com/avs-vb/s...postid=3002771

not sure why this is showing as a broken link?

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localhost127

10-26-11, 12:52 PM

localhost127,

Calm down.

and just what part of my above commentary leads you to believe i am 'excited'?

The (in)validity of RT in a small room is a well argued subject,

im not sure what there even is to 'argue' on the subject.

The calculator is intended for auditoria, (diffuse fields, etc), as you will see from the "audience areas" section of the calculator.

wonderful. im sure there is plenty of applications for your tool - but that does not invalidate my original statement above that it is not relevant with regards to acoustically small spaces.
