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WinRT60
Calculation of reverberation time in rooms

If you need to estimate the reverberation time in a room, evaluate WinRT60 15 days for free from here. For pricing and for purchasing WinRT60, click here. If you have questions about WinRT60, please use the WinRT60/WinFlag forum.

WinRT60 Overview

The reverberation time, i.e. information about the sound decay in a room, is an important parameter for acoustic design. Most national building codes contain requirements for this parameter. The WinRT60 software calculates reverberation time based on knowledge of the absorbing structures in the particular room, including air absorption. These data are either taken from a user database or calculated using the software WinFLAG™. A verification of such calculations is normally performed using a measurement system comprising a loudspeaker, a microphone and a professional measurement system such as WinMLS™. Measured reverberation time may also be imported into the program by way of a Microsoft Excel file. The effect of adding new absorbers to the given room may then be investigated.

In WinRT60 the user chooses between three different methods, using the classical formulae of **W.C. Sabine or C.F. Eyring**, or a newer one by **H. Arau-Puchades**. For the method by Sabine only the total absorbing area and the room volume need to be known, whereas the Arau-Puchades formula demands specifications of the locations of all absorbents.
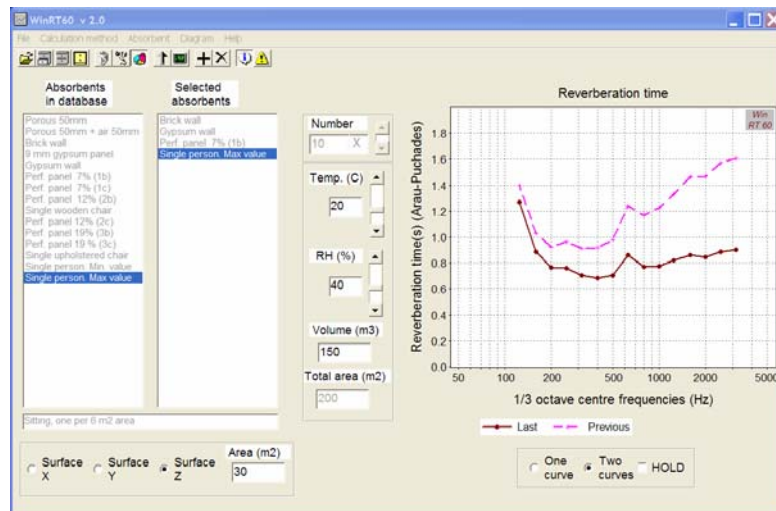
Main features

- Calculates the reverberation time, usually denoted T_{60}, in rooms using the formulae given by W.C. Sabine, C.F. Eyring or H. Arau-Puchades. The latter applies strictly only to rooms of rectangular shape.
- The calculations are based on data for the absorption coefficient for each absorbing surface together with the total equivalent absorption area of objects distributed in the room. These data are based on frequency band calculations or measurements, preferably in one-third-octave bands but octave band data may be used as well.
- The necessary data is either taken from a database in Microsoft Excel-format, from calculated results using the program WinFLAG™ or based on measured reverberation time data. The program is supplied with some database examples.
- The absorption capability of the air in a room is often neglected, but may give an important contribution to the total absorption. This is especially true when the moisture content is low, e.g. in certain times of the year when the relative humidity is low, maybe below 20–30 %. The effect is accounted for by a calculation of the power attenuation coefficient of air, according to ISO 9613 Part 1. From this coefficient the equivalent absorption area due to the air may be calculated and added to the absorption of the other structures in the room.
- A report window in rich text format (.rtf file) is implemented where specifications of the room and the absorbents used, tables of results, and diagrams may easily be imported.
- Calculated results for the reverberation time, together with specifications of the room and the absorbents used, may also be exported to a Microsoft Excel file.
- The set-up for a calculation based on a certain selection of absorbents and specified data for the room may be saved in file, and later recalled for further calculations.
- On errors in the input data the set-up will be displayed in a separate information window.

For more information, please click here to see the WinRT60 manual (right-click to download).

New features in version 2.0

Main changes from the first version 1.0 are:
- The database may now contain data for the equivalent absorption areas of objects distributed in the room. These are not contributing to the area covered by the chosen absorbing structures such as porous or panel absorbers. This implies that the effect of persons, chairs etc. in the room may be accounted for after the proper absorption coefficients are applied to the room boundary surfaces (see figure above, where the effect of adding persons to a room is illustrated).
- Measured reverberation time data may be imported, again from a Microsoft Excel-file, to represent the basic

absorbing condition of a room. The effect of adding given absorbing structures to the room may then be investigated.

- The ordinate scale of all diagrams may be set to fit the data automatically.
- A new option called "New setup" is introduced in the file menu, which keeps the database but erases former data input.

WinRT60 Links
Purchase WinRT60 (includes prices).
Evaluate WinRT60 (includes download link).
WinRT60 manual (right-click to download).
WinRT60/WinFlag forum.