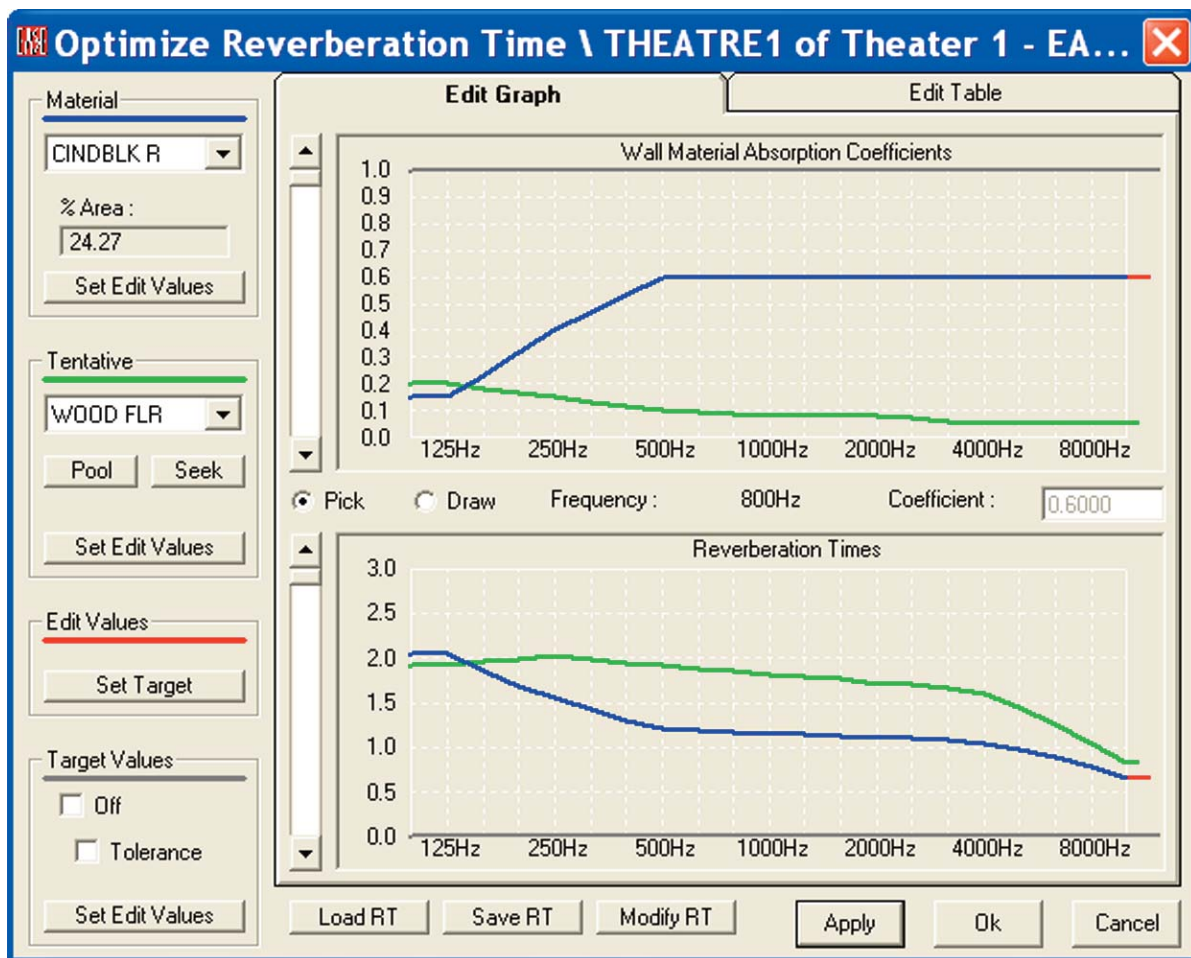


Using Optimize RT

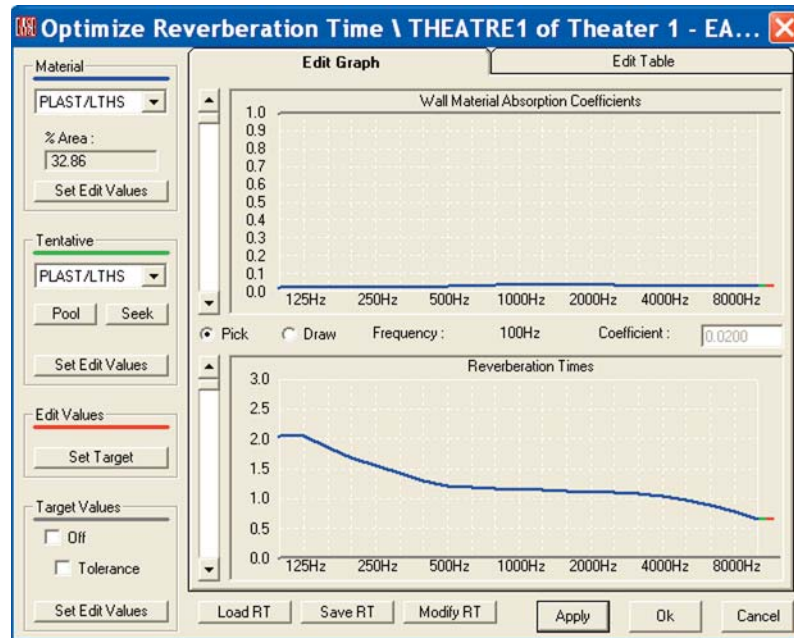


Chapter 7: Optimize RT

One of the very powerful analysis tools included in both EASE and EASE JR is Optimize RT.

Our Theater 1 model is not ideal for music because of its low reverberation times. It's a bit dry. Optimize RT is a quick and easy way to investigate what can be done to correct the room acoustics.

Open the Theater 1 model, go to the Edit Project Data module and select Optimize RT from the Tools pull down menu to open the Optimize RT window shown below.



The top graph displays the absorption coefficients of the Material shown in the Material field to the left of the graph; in this case PLAST/LTHS. The figures below the Material window tell you how much of the room's surface area is covered by that material; in this case almost 1/3 of the total surface area.

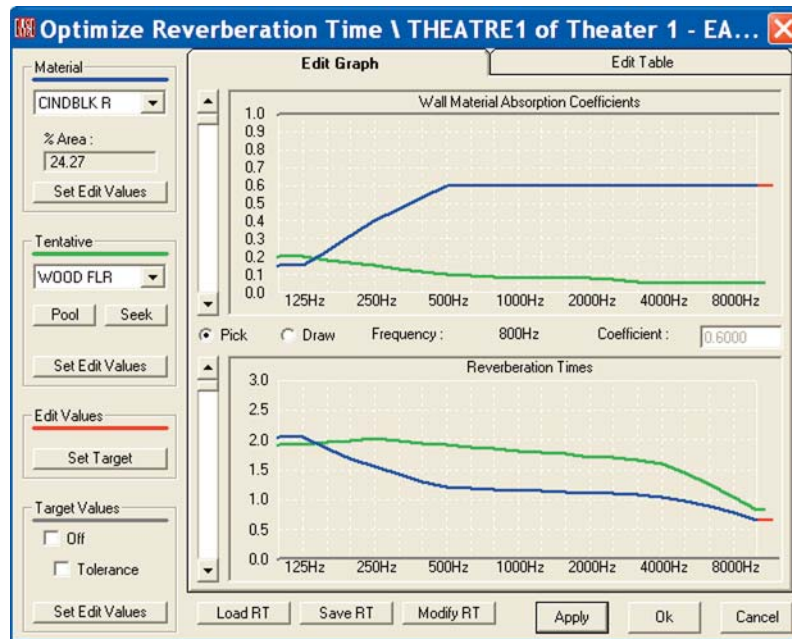
The down arrow opens a listing of all the materials used in the room. This allows you to quickly scan through the materials and their absorption coefficients. The materials are listed in order based on the percentage of surface area they cover. Note that in this room only 3 materials cover almost 70% of the room's surface. If we are going to significantly change the RT times we are probably going to have to deal with one of these materials (surfaces).

Also note that this module is an excellent spot to quickly review and compare the absorption characteristics of a number of materials. All you have to do is to load them into the project and then you can review them much faster than you can in the Main Material Base module.

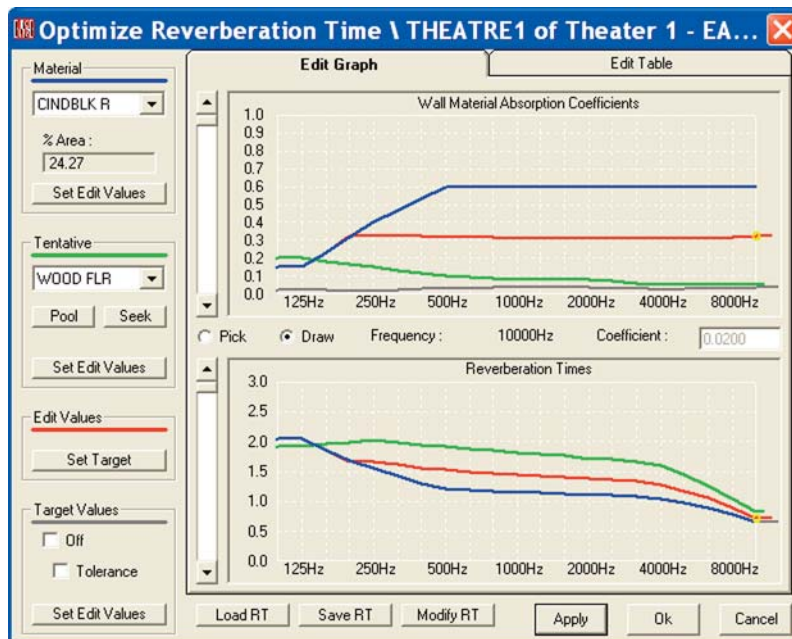
The bottom graph shows the calculated RT times for the room. Don't be alarmed if the curve looks a little different than the one shown in Room RT under the View pull down menu. It's the vertical scaling that makes the difference.

The Tentative section of the Optimize RT screen allows you to "tentatively" replace one of the materials with a different material and view the effect. First, choose the material you want to replace in the Material window. We'll choose CINDBLK R which covers 24.27% of the room's surface area.

Then in the Tentative section use the drop down arrow to open the list of materials available in the Pool and choose a new material. Choosing WOOD FLR produces the results shown below. The green curves show the changes. It looks like we are headed in the right direction.



Selecting *Pick* and then clicking on the *Wall Material Absorption Coefficients* or the *Reverberation Times* graphs allows you to change the Absorption Coefficient or RT Times frequency by frequency. Clicking on *Draw* lets you draw a new desired Absorption Coefficient or RT60 curve. To use *Pick*, click on a point on the Absorption Coefficient or RT Time curve and then use your Mouse to move the curve up or down at that frequency. To use *Draw*, click on a point and then use your Mouse to "drag" the desired curve across the graph.



EASE 4.3 User's Guide & Tutorial

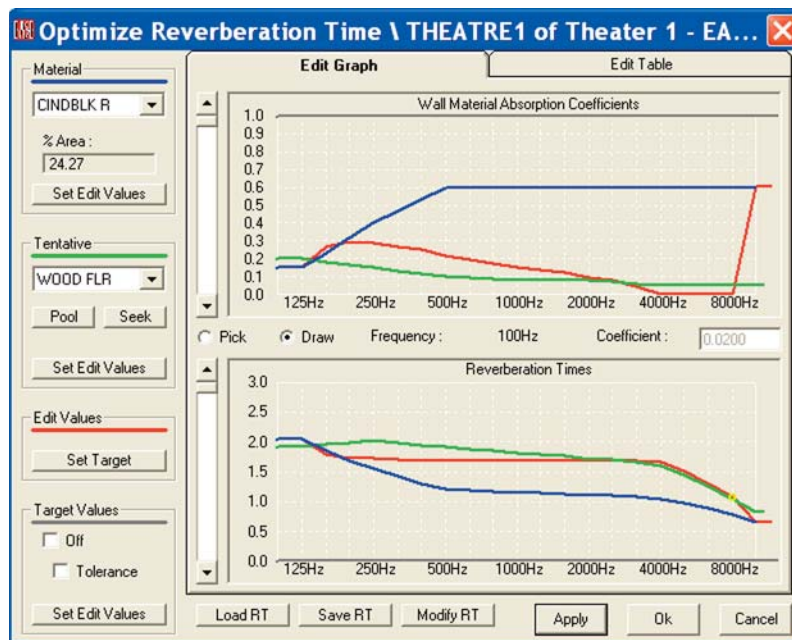
Note that as you are drawing new curves, if you don't like the one you have drawn you can erase it by clicking on one of the *Set Edit Values* buttons. They act as Reset buttons by restoring the original values.

Also notice that the program will not let you do the impossible. The absorption of the PLAST/LTHS surfaces is so small that little can be accomplished toward increasing the room's RT60 by substituting a material with a lower absorption coefficient. So, the program won't let you set an RT60 time curve higher than the curve you would get if the PLAST/LATHS surfaces were all changed to MIRROR reflectors having no absorption. It will only let you draw a slightly higher RT60 time curve. This tells you that if you are going to make the room more reverberant, you will have to work on one of the materials covering more surface area.

At this point you can either go through the materials (surfaces) one by one until you find a combination that gives you the desired RT Times or you can enter a desired RT curve (the Target curve) and use *Seek* to let the program seek out from a Pool of surface materials the one which comes closest to producing the desired result. You can also mark the Target Curve with a Tolerance frame if you like. Put a check in the Tolerance check box under Target Values and then press *Set Target* under *Edit Values*.

Select *Seek* and the program will search the Pool for you and select the best one available in the Pool. For us, the program's initial selection was WOOD FLR, a material we weren't sure we wanted to use for the surfaces involved). So, we redrew the Target Curve and pressed *Seek* again to see if the program would come up with another material. See how fast it is to try different solutions.

Note that at this point the only purpose of Target Values is to visualize the desired RT and, if wanted a tolerance range. You can also return to *Edit Project* and expand the Pool of available Materials. To do this, return to the *Edit Program* window and go to The *Edit* pull down menu and select *Select Project DataBase/Select Wall Material* to browse through the Material database and make your selections.



At this point the normal thing to do would be to *Apply* and *OK* the change and return to one of the mapping programs to see what effect this change had on the overall system.

Note that we could have also opened the *Edit Table* Tab and entered the desired Absorption Coefficients or RT Times in the data spreadsheet under *Edit Value*.

It also should be noted that this example is a little unique in that usually we are looking for a way to decrease the RT Times instead of increasing them. The principle is the same, however.