General Information

The provided ExpertGUI has been developed purely as a prototype. Therefore, it has not been optimized properly. We recommend waiting until each of your inputs has been processed (GUI stops creating new textboxes) before you click on anything else. Please be aware that loading times for ThicknessRanges and CostRanges might be quite long (a few minutes) due to the high amount of data that needs to be processed.

Glossary

The following terms apply to the application of this document:

KG3x0Option: A generic building part based on DIN 276 (see Fig.1) containing three KG3xxOptions (e.g. 320 Foundation, Substructure with its three subdivisions 324, 322 and 325)
KG3xxOption: Third level of the Cost Groups containing 1-n Layertypes
Reset: Deletes all the input in the create Data section.
Write to DB: Writes your KG3x0Option to the Database.
Replacement Order: Primarily used to position elements that stick together
Exposure quality: Depending on the visibility or exposure of Building parts, the range of thicknesses or cost varies (e.g. whether the Material has to be coated or in a presentable condition)
Position: Top to bottom for horizontal elements, outside to the inside for walls
used for better accessibility due to differences in the service lifes
Variation Parameter Settings: The range of thickness of the selected building part will be adapted to the **structural** or **thermal** requirements
Textbox Height: Used to vary the height of the Textboxes in the tables for the ranges and the View Data - Tab

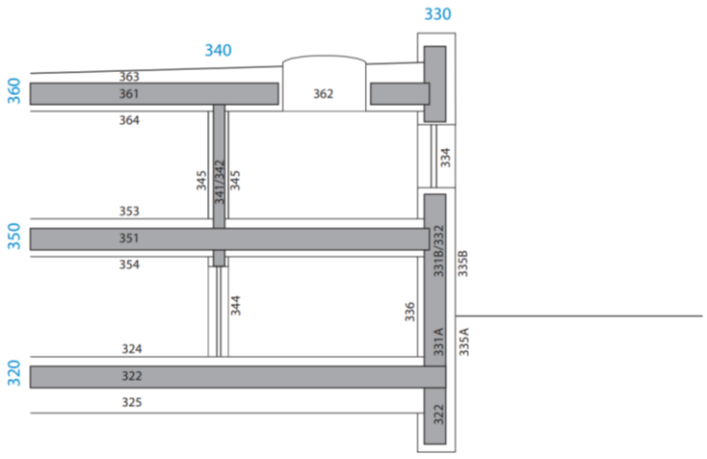
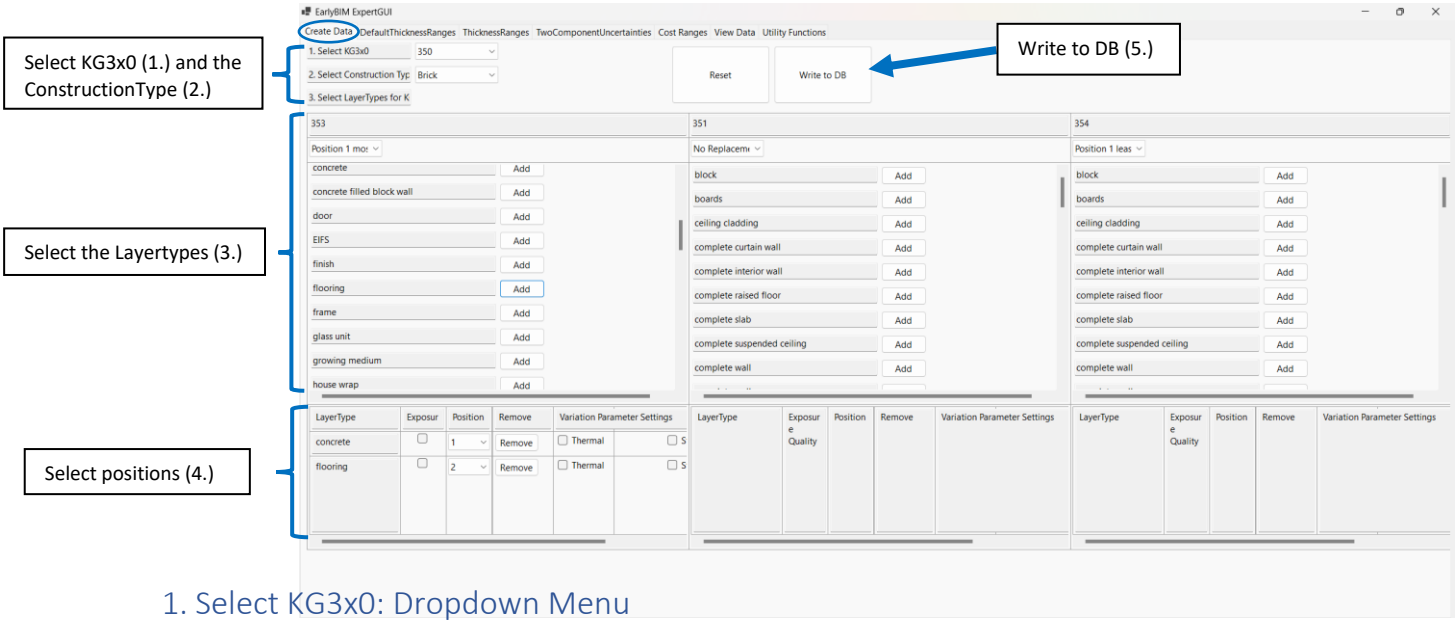


Fig.1 KG3x0Option Overview

Adding new KG3x0Options - Create Data

Purpose: Adjusting the pool of KG3x0Options to better reflect commonly used constructions in a certain country or region. Create new KG3x0Options, their respective KG3xxOptions and links the info correctly within the Database.



1. Select KG3x0: Dropdown Menu

- Choose one of the predefined KG3x0Names for your KG3x0Option
- Necessary step to create a new KG3x0Option
    - New KG3x0Names can NOT be created from within the ExpertGUI

2. Select ConstructionType: Dropdown Menu

- Choose one of the predefined ConstructionTypeNames for your KG3x0Option
- Necessary step to create a new KG3x0Option
    - New ConstructionTypeNames can NOT be created from within the ExpertGUI

3. Select LayerType

- After selecting a KG3x0 and a Construction Type, a list of Layer Types will be displayed. These can be added to the cost groups (KG3xx) of your chosen KG3x0.
- The loaded KG3xxNames depend on predefined “KG3x0Name_KG3xxName” links within the database
    - The links within the database are based on the DIN 276 (see Fig.1), therefore the Links can not be changed from within the ExpertGUI
- The available LayerTypeNames are based on the predefined “LayerTypeNames” within the database
    - New “LayerTypeNames” can NOT be created from within the ExpertGUI
- To add a LayerType to a KG3xxOption click on the “Add” button next to its name
    - The added LayerType appears in the row below where you can select a position (see step 4)
- To delete a LayerType from your KG3xxOption scroll down to the position selection table and click on the remove button
    - The deleted LayerType disappears from the row below where you can select a position

4. Select positions for the LayerTypes selected in Step 3

- This row of the KG3x0Option Table lets you order the LayerTypes you selected earlier
- To change the position of a layertype, simply select the new position in the dropdown menu next to the layertype
- This allows multiple layertypes to be in the same position
- Position Indices guideline:
    - Top to bottom for horizontal elements
    - Outside to inside for walls

6. Write to database

- This is a necessary step to create your own assembly options.
- If you have finished selecting and positioning the Layertypes, you have to submit your creation to the Database. The “Write to DB” Button has to be used each time you make changes which you want to save

Define Ranges

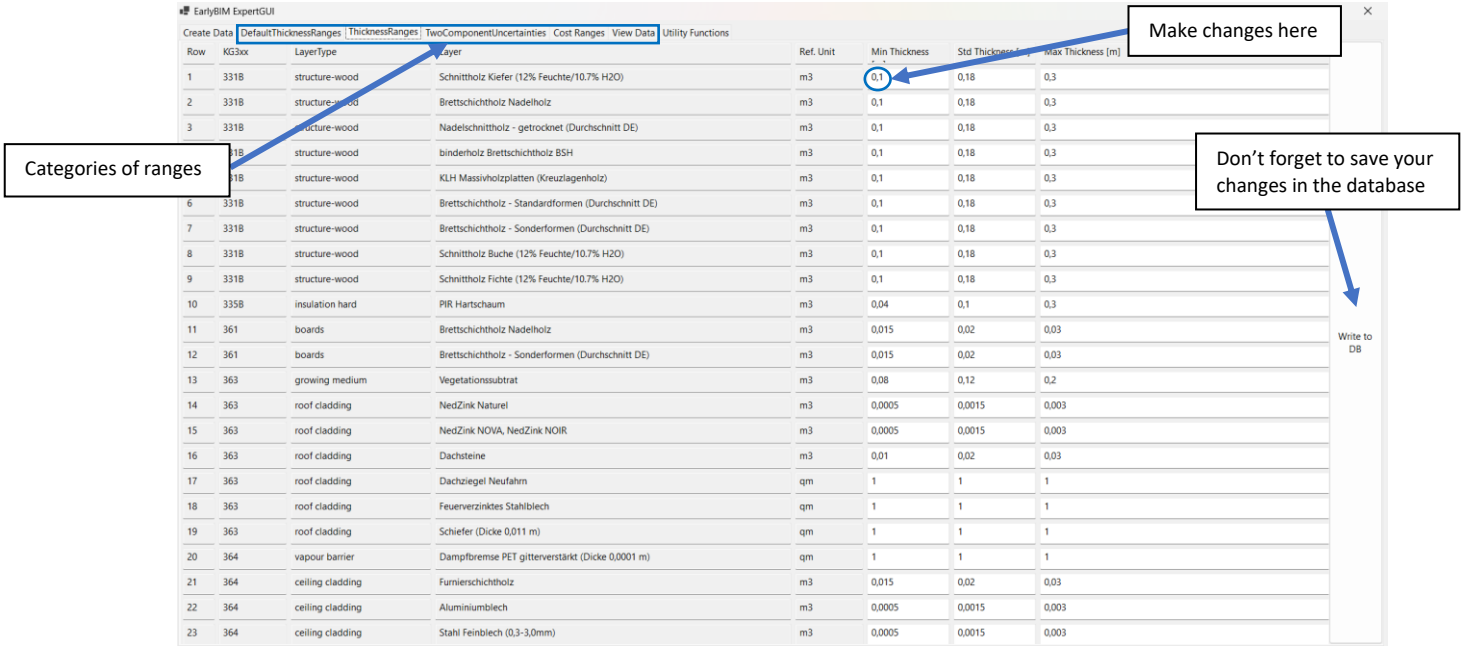
Purpose: Narrowing down thickness or cost ranges for certain materials/layertypes to reduce the broad corridor of emissions and costs during calculation.
Ranges can either be edited from within the GUI or by exporting and re-importing csv files. Both options are completely equivalent to each other, we recommend using the GUI for singular small changes and using csv files to edit larger batches of data.

2. Option: change ranges from GUI

- Lets you change the thickness of materials from within the ExpertGUI, you can find the following categories on top of the ExpertGUI.
- For the ranges there is a value for the minimum the maximum and the average thickness or cost
    - DefaultThicknessRanges: standard thicknesses of LayerTypes in certain locations (KG3xx). These are used for every materials for which no other ranges has been entered in the Thicknessranges tab.
    - Thicknessranges: Thicknesses of specific materials associated with their function (LayerType) and location (KG3xx)
    - TwoComponentUncertainties: Thicknesses and Volume distribution of two component Layertypes
    - Cost Ranges: broad selection of pricing of the materials being associated to the function (layertype) and location (KG3xx)
    - If there are problems to see the text in the textboxes, there is the option to adjust the height of the textboxes in Utility Functions
- The table containing thickness ranges is automatically created when you open the ExpertGUI and load a database
    - The table is NOT updated when you create a new KG3x0Option. If you want to define the thicknesses for your newly created data, restart the ExpertGUI
- New entries can NOT be directly created from within the ExpertGUI and should also NOT be created manually from the DB Browser
    - New entries are created automatically when a newly created KG3x0Option (created in the “Create Data”-Tab) needs them
        - Newly created entries will have all thicknesses set to 0 and appear on top of the table

- Entries are deleted automatically when they are no longer needed

- To change a value, simply overwrite the value within the textbox
  - KG3xxName, Layer and LayerType cannot be changed
  - Uses your operating system's decimal separator (“.” For US, “,” for german.
- To write your changes to the DB, click the “Write to DB” Button on the right
  - The “Write to DB” Button in other Tabs will not have any effect, you need to use the button in this tab
  - If the program detects any mistakes within your input, it will detect this and not write anything (even for the rows without mistakes) to the database.

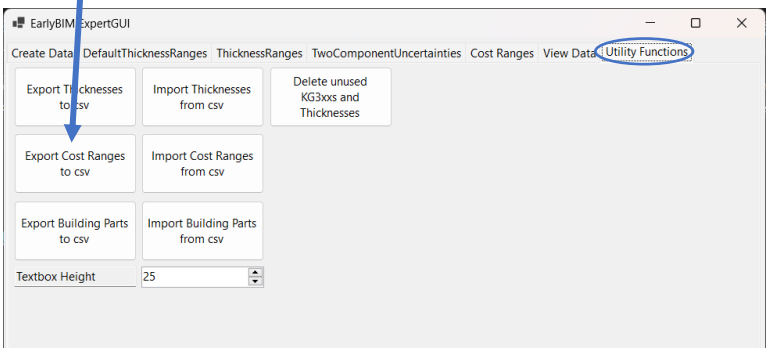


Row	KG3xx	LayerType	Layer	Ref. Unit	Min Thickness	Std Thickness [m]	Max Thickness [m]
1	331B	structure-wood	Schnittholz Kiefer (12% Feuchte/10.7% H2O)	m3	0,1	0,18	0,3
2	331B	structure-wood	Brettschichtholz Nadelholz	m3	0,1	0,18	0,3
3	331B	structure-wood	Nadelschnittholz - getrocknet (Durchschnitt DE)	m3	0,1	0,18	0,3
4	331B	structure-wood	binderholz Brettschichtholz BSH	m3	0,1	0,18	0,3
5	331B	structure-wood	KLH Massivholzplatten (Kreuzlagenholz)	m3	0,1	0,18	0,3
6	331B	structure-wood	Brettschichtholz - Standardformen (Durchschnitt DE)	m3	0,1	0,18	0,3
7	331B	structure-wood	Brettschichtholz - Sonderformen (Durchschnitt DE)	m3	0,1	0,18	0,3
8	331B	structure-wood	Schnittholz Buche (12% Feuchte/10.7% H2O)	m3	0,1	0,18	0,3
9	331B	structure-wood	Schnittholz Fichte (12% Feuchte/10.7% H2O)	m3	0,1	0,18	0,3
10	335B	insulation hard	PIR Hartschaum	m3	0,04	0,1	0,3
11	361	boards	Brettschichtholz Nadelholz	m3	0,015	0,02	0,03
12	361	boards	Brettschichtholz - Sonderformen (Durchschnitt DE)	m3	0,015	0,02	0,03
13	363	growing medium	Vegetationssubtrat	m3	0,08	0,12	0,2
14	363	roof cladding	NedZink Naturel	m3	0,0005	0,0015	0,003
15	363	roof cladding	NedZink NOVA, NedZink NOIR	m3	0,0005	0,0015	0,003
16	363	roof cladding	Dachsteine	m3	0,01	0,02	0,03
17	363	roof cladding	Dachziegel Neufahrn	qm	1	1	1
18	363	roof cladding	Feuerverzinktes Stahlblech	qm	1	1	1
19	363	roof cladding	Schiefer (Dicke 0,011 m)	qm	1	1	1
20	364	vapour barrier	Dampfbremse PET gitterverstärkt (Dicke 0,0001 m)	qm	1	1	1
21	364	ceiling cladding	Furnierschichtholz	m3	0,015	0,02	0,03
22	364	ceiling cladding	Aluminiumblech	m3	0,0005	0,0015	0,003
23	364	ceiling cladding	Stahl Feinblech (0,3-3,0mm)	m3	0,0005	0,0015	0,003

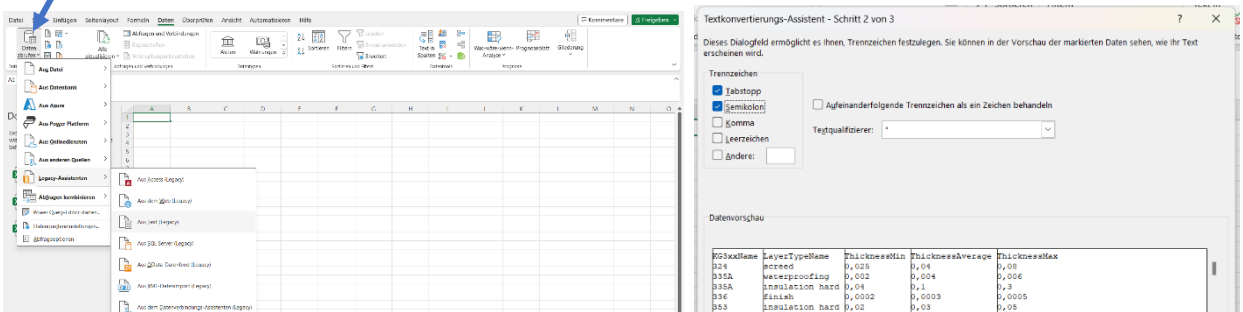
1. Option: change ranges from csv files

- Change values for the “Thickness” and the “Cost Range”

- 1. A folder containing the csv files can be exported



- 2. The file from within the folder can be opened in Excel (use semicolon or comma depending on your set language in Excel)



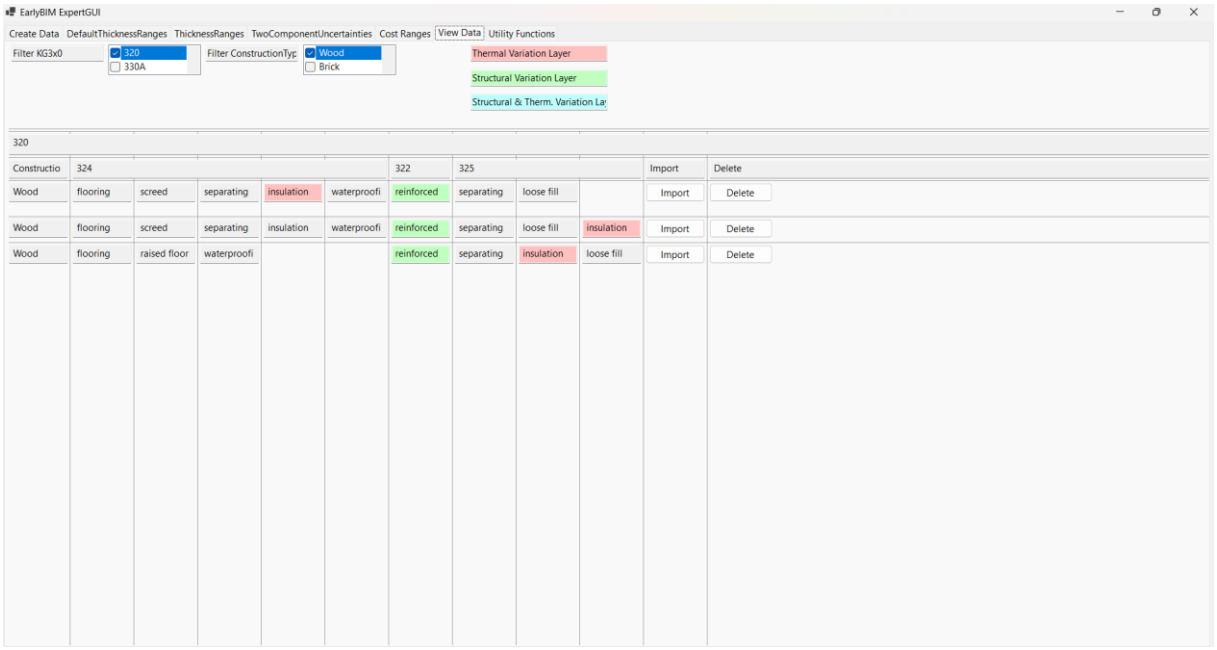
- 3. The values can be changed and the folder can then be imported via the buttons if you haven't changed the name of the files in your folder
    - The folder location includes all csv files, therefore a folder, not a csv file has to be selected

Display the KG3x0Option/Change KG3x0Options - View Data

Purpose: Display the combinations of materials from within the composed building parts, import the already assembled building option to create data to make changes.

1. Display the KG3x0Options

- Select Filter KG3x0 and Filter ConstructionType to find the KG3x0Option containing the composed LayerTypes
- If the Textboxes are cut off and the text and you can't read the layertypes be read, please adjust the textbox height in the "Utility Functions" tab



2. Change new assembly options

- Use **import** to change already finished assembly options
    - The finished assembly option will be imported to the create Data section
    - Add or remove new building parts to your new creation
    - With the import function, the previous Kg3x0 option is rewritten and not overwritten
    - If you made a mistake, you have to press delete manually afterwards

Utility Functions

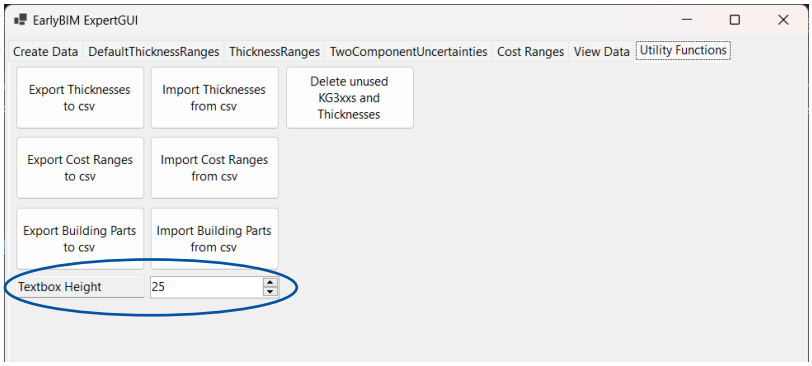
The tab Utility Functions offers an alternative way to change the values of the Ranges. Moreover there is the option to vary the size of the textboxes. Lastly unused Data from the database can be deleted.

1. Change the value of ranges and Building parts

- The tables from the Thicknesses and Cost Ranges can be exported and varied as described earlier in “Define Ranges”. Exporting and varying the building parts is not recommended by the developers.

2. Change Textbox Height

- To have a better look on the entries of the tables, there is the option to adjust the height of the Textboxes to individual demands. This can be done in the Tab “Utility functions”. The preset of 25 can be varied up or down, with effects on the size of Textboxes in the Tabs of the different ranges.



3. Delete unused KG3xxs and Thicknesses

- Unused KG3xxs and Thicknesses, which are saved in the database, can be automatically deleted via this button. This cleans the database from useless information.