



## Information on IMMI Update 1: Version IMMI 2024 [562]

As of: 25. Juli 2024

### News

#### Implementation of new ISO 9613-2, Second edition 2024-01

The document:

*"Acoustics – Attenuation of sound during propagation outdoors.  
Part 2 Engineering methods for the prediction of sound pressure levels outdoors. ISO 9613-2, Second Edition 2024-01"*

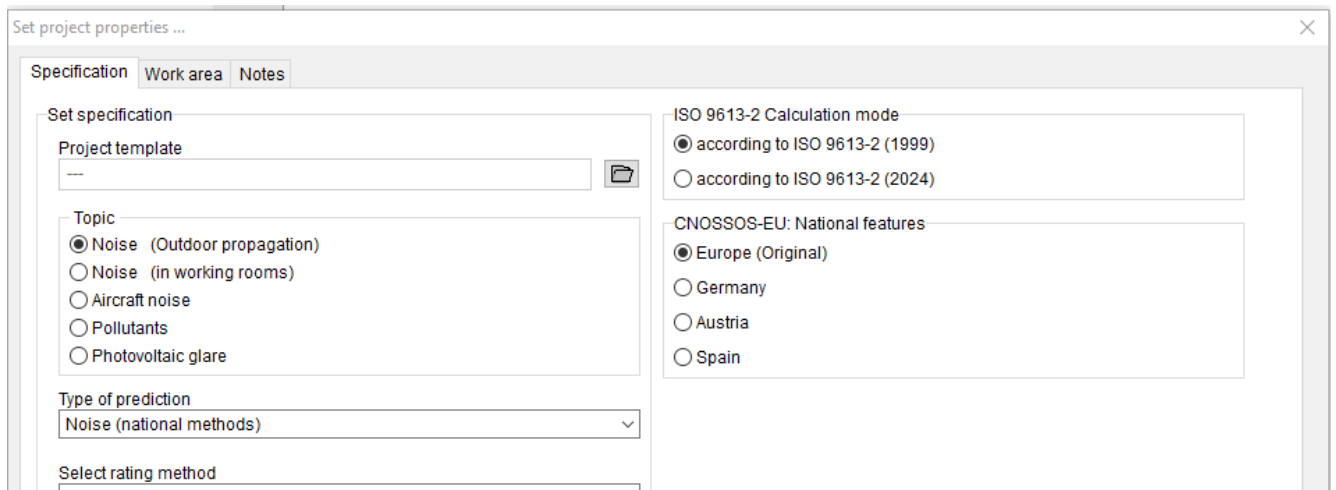
is the new version of the previous document that describes the calculation according to ISO 9613-2, which is available as an industrial noise library in IMMI. The changes and extensions have been implemented in IMMI.

When calculating according to ISO 9613-2, you can now choose whether to calculate according to the previous DIN ISO 9613-2, October 1999, or the new ISO 9613-2 Second Edition, 2024-01.

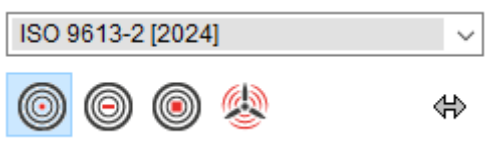
The changes and enhancements—as far as they affect the user interface—are described below. The new calculation features that cannot be controlled by the user are automatically used when the new ISO 9613-2 is selected and are not described here. Please refer to the document cited above.

**Note:** No test tasks are yet available for the new edition of ISO 9613-2:2024.

## Selection of the ISO 9613-2 version




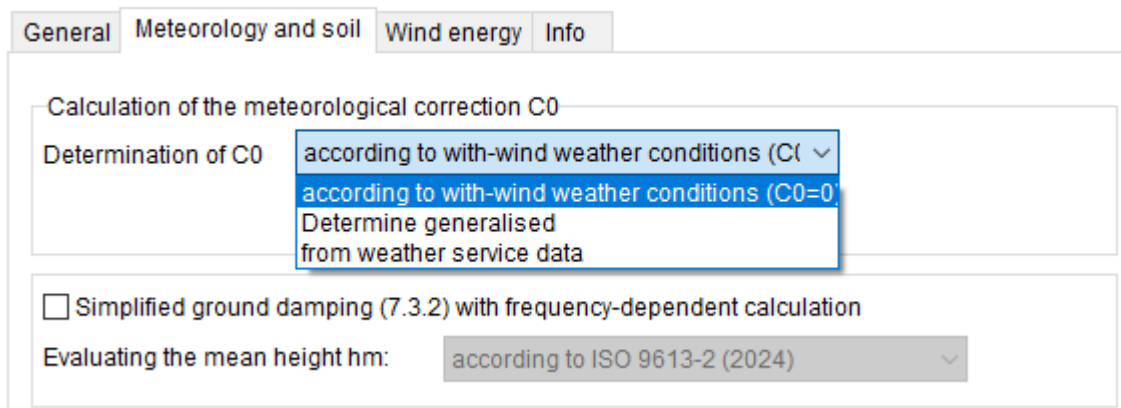
- On the page **Specification** of the project dialog, you can select which version of ISO 9613-2 is to be used for the calculation. If version 2024 is selected, some older settings are no longer accessible on the ISO9613-2 library page, as these are automatically taken into account by the new ISO.
- Depending on the setting selected, the version used is displayed in the toolbox when selecting the elements. (Here 2024)



Using the  button, you can jump to the project page, where you can set the ISO version, you want to use for calculation.

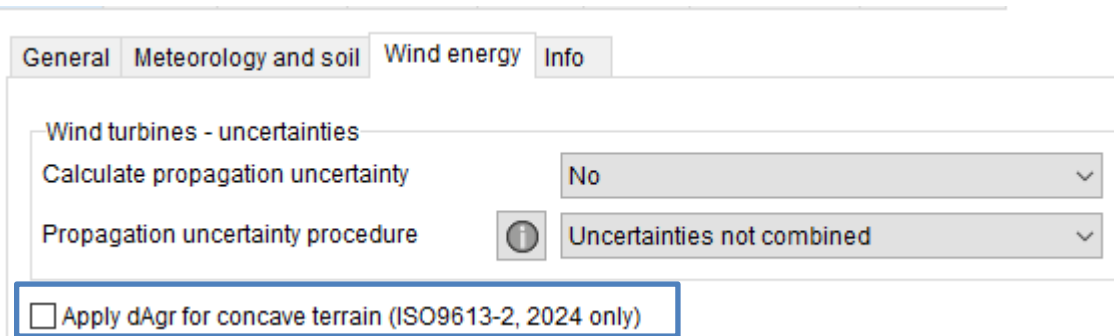
## Parameters for the Element Library ISO 9613-2

- The page **General** shows which version is used for the calculation, The button  takes you directly to the project settings to switch between the two ISO version
- The **Meteorology and soil** tab contains settings for meteorology and ground damping. The settings for the C0 parameter have been simplified somewhat with a dropdown menu.



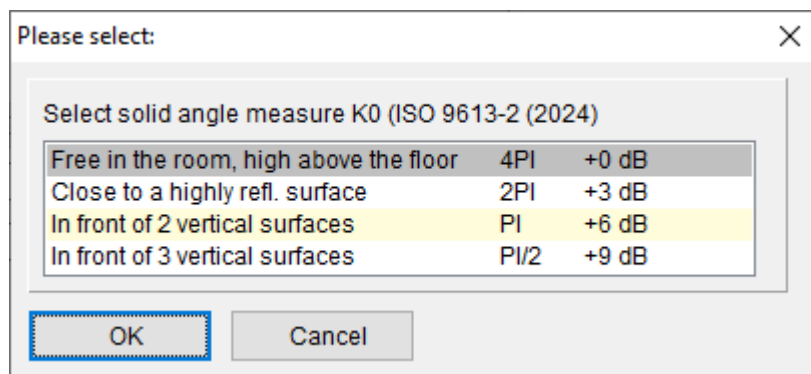
**Note:** The calculation mode for the **mean height** cannot be selected if ISO 9613-2:2024 is selected.

- Under the **Wind energy** tab, a setting can be selected that is only valid for the ISO 9613-2: 2024 mode. If desired, the term  $dA_{gr}$ , according to ISO 9613-2: 2024, section D5 (formula D1), can be taken into account.



## Input help for D0

The input help for the value D0 adapts to the selection of whether old or new ISO 9613-2 is to be used. The selection in the **activated calculation parameters** is decisive for this.



## Cylindrical Reflector

The elements *house* or *wall* can reflect. If a round house or a closed, round wall with many nodes was previously modeled (for example, with the macro: Create circle), there was often no reflection because the individual sections of the element were very narrow and were therefore not considered due to the reflection criterion, or only for high frequencies. IMMI now automatically recognizes whether a house or a closed wall is a cylindrical reflector and automatically calculates the correction term  $A_{curv}$ .

A house or wall element is a **cylindrical reflector** if the following properties are fulfilled:

- The element is closed
- The **Reflection** property is activated.
- All nodes of the element have the same distance from the center of gravity of the element. (This is the case, for example, if the element was created with the macro: Create circle macro).
- The element has a minimum number of nodes. This minimum number can be defined in the Settings | Environment | Calculation dialog. (Default setting 20 nodes)

ISO 9613-2 (2024): Minimum number of corners for round reflectors:

The value for  $A_{curv}$  is not explicitly displayed in the results lists, but is subtracted from the sound power - just like the absorption loss at the reflector. This reduced sound power is then displayed in the lists.

## Vegetation damping

ISO 9613-2 provides two ways of taking damping due to vegetation into account. One is the method described in ISO 9613-2:2024 Annex A, A.2.2. This method can already be found in ISO 9613-2:1999.

New is the **detailed method using forest parameters** according to ISO 9613-2:2024 Annex A, A.2.3.

Damping by vegetation is controlled via the **vegetation damping** element.

Constant rel. height /m

simple calculation

D /dB/100m

Vegetation transparent during winter (Austria only)

detailed calculation according to ISO 9613

detailed calculation

Stem diameter (D) /cm

Base area (G) /m<sup>2</sup>/10000 m<sup>2</sup>

Standing stock (V) /m<sup>3</sup>/10000m<sup>3</sup>

Horizontal structuring (S)


low height foliage (Z)

The following should be noted:

The type of sound source controls the behavior and, thus, the damping effect of the vegetation element.

- The source is a source according to ISO 9613-2, setting: **calculate according to ISO 913-2:1999**. The parameter D in dB/100m is used here.  
**Note:** The entered value is divided by 5. The spectrum, according to Table A.1, is multiplied by the result. This spectrum is then used for the vegetation damping.
- The source is a source according to ISO 9613-2, setting: **calculate according to ISO913-2:2024**. The forest parameters of the detailed method are now used here to determine the vegetation damping. (see Appendix A, A2.3)
- The source is **not** an ISO 9613-2 source. (e.g., a source according to CNOSSOS-EU). Here, the input parameter of the simple calculation is used, and thus, the damping is calculated according to the regulation to which the source belongs.

**Note:** If the option **Calculate according to ISO 9613-2 in detail** is activated for an element, but the option **Calculate according to ISO 9613-2:1999** is activated in the settings, a warning appears stating that this is not permitted. A calculation is not possible in this case.

**Input help:**  This switch sets the forest parameters for the three forest types specified as examples in IOS 9613-2:2024.

Select a forest type according to ISO9613, 2024 Table A.6

please select

Thin forest

Minor structured

intense structured


OK Cancel

**Control:**  Displays the values for  $K_{Lin}$  according to formula Appendix A, A.3, which were calculated with the input values.

## Directivity for chimneys

A special directivity can be selected for sound sources representing a fireplace opening. The calculation is carried out according to ISO 9613-2:2024 Annex B.









### Input type

Directivity	Chimney according to ISO9613-2, 2024	
Radius of the chimney opening /m	<input type="text" value="2,000"/>	
Flue gas temperature /°C	<input type="text" value="100,000"/>	

The directivity is calculated from the parameters chimney opening radius and exhaust gas temperature.

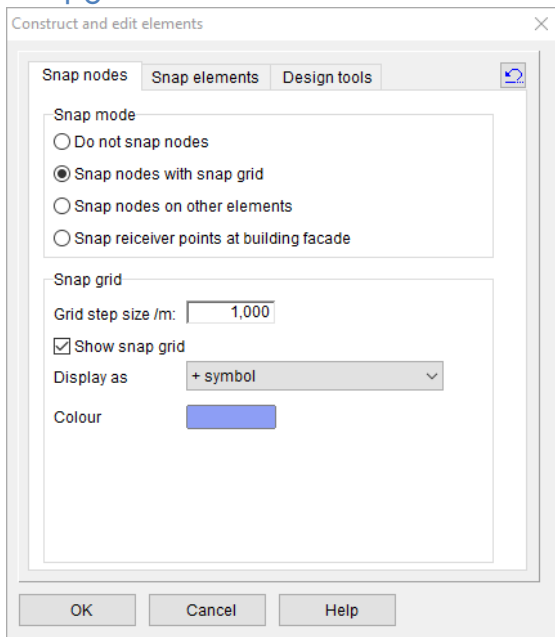
### Wind turbines

Wind turbines can now be calculated in accordance with ISO 9613-2:2024.

Level input	
<input checked="" type="radio"/> Direct	<input type="radio"/> Expanded
 Day	Lw in dB(A) <input type="text"/>
Night	<input type="text"/>
<input type="checkbox"/> enable uncertainties	
Sigma LwA/dB	 <input type="text" value="1,64"/>
Basis for calculating	
<input checked="" type="radio"/> ISO 9613-2 (2024)	
<input type="radio"/> ISO 9613-2 (1999)	
<input type="radio"/> ISO 9613-2 (1999) / Alternative method	 
<input type="radio"/> ISO 9613-2 (1999) / Interim method	
<input type="radio"/> IOA Good Practice Guide on Wind Turbine Noise (UK)	


The term  $dA_{gr}$  (described in Appendix D.5, Formula D.1) can optionally be used. The setting for this can be made in the ISO library parameters.

## Snapgrid



The snap grid display has two new parameters.

- You can choose whether the snap grid should be displayed as a simple pixel dot, as a + symbol or as an x symbol.
- The color in which the snap grid is to be drawn can be set

With the  button, you can set all snap grid parameters to default values.

## XHN files

There is an extended version of the XHN files that contain directivity information from 20 Hz (previously from 100 Hz). These files can now also be imported and used as IMMI directivity.

When displaying the directivity documentation (Project/Other databases/Directivity), the XHN data is now displayed in the form in which it appears in the XHN file. Previously, the data was displayed transposed. It should be noted, however, that IMMI notes attenuation values with the opposite sign to those output in the XHN file.

## Support of the Austrian WMS cadastral map server

Background bitmaps from online map services can be imported for the site plan via the **File | Import | Background bitmap from the online map service menu** or the corresponding button on the toolbar.

A new entry, **Austria—Cadastral Maps**, has been added to the list of supported WMS servers. This map server provides 3 different "layers" as maps for download (KAT\_DKM\_GST-NFL, DKM\_GST, DKM\_NFL). In addition, we have provided a combined map of two individual layers (DKM\_NFL,DKM\_GST).

## Kartenimport

1612 387/2 388

1  Ortssuche

Kartenmitte: Mausposition:

16.372504 48.208354 16.369870 48.209724  UTM

Kartengrenzen:

Westen Osten Süden Norden Kartenzoom

16.367354 16.377654 48.206257 48.210450 18

Österreich - Katasterkarten

Kataster Grafik Nutzungsflächen - KAT\_DKM\_GST-NFL

Kataster Grafik Grundstücksverzeichnis - DKM\_GST

Kataster Grafik Nutzungsflaechen - DKM\_NFL

Kataster Grafik Kombination - DKM\_NFL\_DKM\_GST

OK Abbrechen Hilfe

These cadastral maps for Austria are provided by the Federal Office of Metrology and Surveying via the Internet address <https://data.bev.gv.at/geoserver>.

The following legend is used for the utilization areas "Layer" (DKM\_NFL):

✓ KAT\_DKM\_NFL

Legende Information zum Layer Einstellungen

- 40 Dauerkulturanlagen oder Erwerbsgärten
- 41 Gebäude
- 42 Parkplätze
- 48 Äcker Wiesen Weiden
- 52 Gärten
- 56 Wälder
- 57 Verbuschte Flächen
- 59 Fließende Gewässer
- 60 Stehende Gewässer
- 63 Betriebsflächen
- 64 Gewässerrandflächen
- 65 Verkehrsrandflächen
- 83 Gebäudenebenflächen
- 92 Schienenverkehrsanlagen
- 95 Straßenverkehrsanlagen
- 96 Freizeitflächen
- 53 Weingärten
- 54 Alpen
- 55 Krummholzflächen
- 58 Forststraßen
- 61 Feuchtgebiete
- 62 Vegetationsarme Flächen
- 72 Friedhöfe
- 84 Halden und Deponien
- 87 Fels- und Geröllflächen
- 88 Gletscher

## Element library pollutants - New version AUSTAL 3.3 with wet drift option

In AUSTAL 3.2, the no-standard option "WETDRIFT" was introduced. With the new version AUSTAL 3.3 this option has been implemented in IMMI.

Wet Drift takes into account the horizontal droplet drift when displaying the wet deposition. This is described in more detail in Appendix J of the documentation "austal-3.3.0\_de.pdf". The new AUSTAL version is stored in the IMMI subfolder "AUSTAL3.3".

Wet Drift is activated in the dialog box for the calculation parameters as a parameterless checkbox:

**Global** **Pollutants**

**Type of prediction:** AUSTAL

**Meteorology:** Time series \*AKTERM Zeitreihe D Meteo.

**Quality level:** 0

Recalculate wind field library

Calculate wind field library only

Particle model with arbitrary start values

**Number of calculation kernels for multicore calculations:**

1  2  4  8

Calculate building flow field

Rasterize buildings

Wet deposition

Wet Drift (No-Standard)

**Anemometer: x /m:** 0,00

**Anemometer: y /m:** 0,00

**Anemometer height /m:** 10,00

Anemometer height from AKTerm

This option can only be used and activated for wet deposition.

## Element library sonROAD18

The dispersion calculation is carried out in accordance with ISO9613-2. In accordance with the BAFU-Vollzugshilfe with titel "Strassenlärm-Berechnungsmodell sonROAD18, Modellempfehlungen", the use of sonROAD18 in combination with the ISO 9613-2 dispersion calculation is recommended for all road noise calculations. In this implementation guide, the use of the dispersion calculation according to ISO 9613-2 is recommended without specifying a version. Accordingly, the latest version should be used. The settings for this can be made on the ISO 9613-2 element library parameters page.



## Changes

### Macro: Generate receiver points (Building)

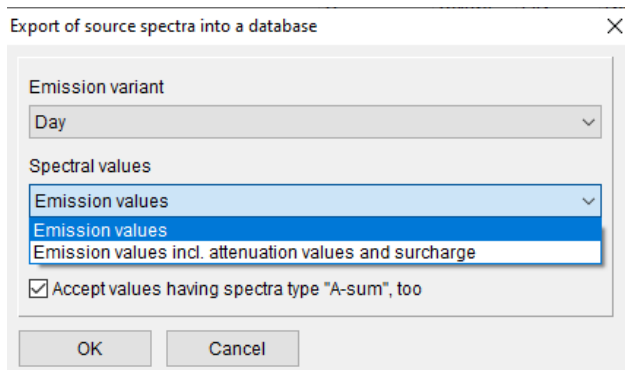
In this dialogue, the entry of limit values (if a rating is set) has been improved and adapted to the entry of guide limit in the immission point dialogue.

### Wind turbine with uncertainties

Until now, wind turbines could not be combined with other sound sources in the ISO 9613-2 library if the uncertainty calculation was activated. This is now possible.

### Spectra databases

Transfer of spectra: When transferring spectra from sound sources of a project to the external emission database, the  $L_w$  ( $L_w'$  or  $L_w''$ ) of the sound source was always transferred ( $L_w$ =emission minus attenuation). Now, either the  $L_w$  or the pure emission spectrum can be transferred.

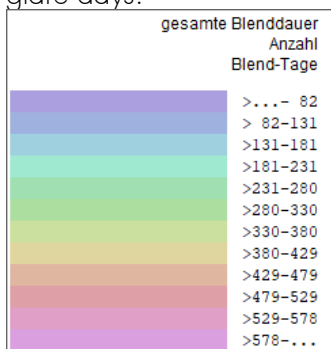


When transferring attenuation spectra, these are now correctly transferred from the sound source.

Sound sources do not contain reflection spectra, so the "Transfer from project" function is not available for reflection spectra.

### Photovoltaic element library

- **Color scale for glare days:** The photovoltaic calculation now has its own color scale for displaying the glare days.



If an old project is loaded, this scale must first be created using the **All standard entries** button.

- **Calculated result layers** unsuitable for color display (e.g., "Day of first/last glare") are no longer offered for color display.
- **Some result lists** did not previously list the general calculation parameters. This information has been added.

Photovoltaic	Point calculation
Photovoltaic calculation	Point calculation
Variant	17 degrees morning car
Settings	Copy from reference

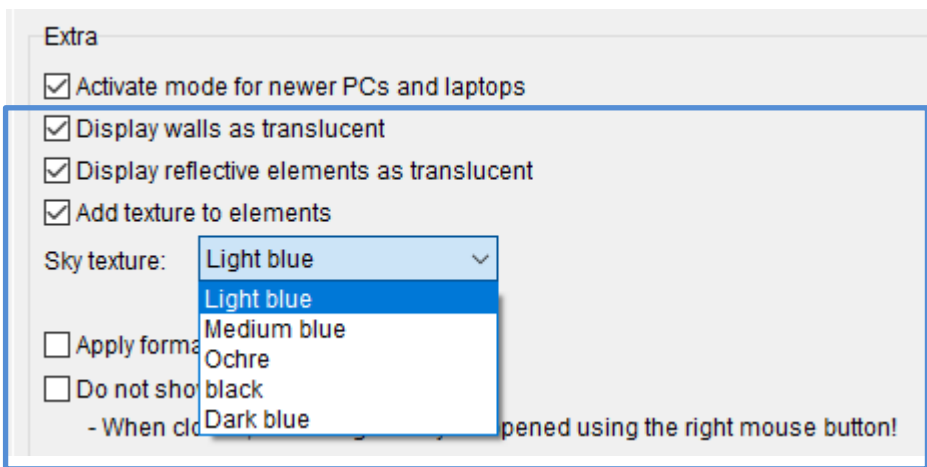
- As of the current version, **sun elements** are **no longer** displayed in the site plan. However, the display can be reactivated via a compatibility switch.

If a sun diagram was displayed, **all** glare times of **all** immission points were displayed together when the diagram was opened. This could take a very long time. The user could not see whether the program was still responding. Now, when the diagram is opened, only the first immission point at which glare occurs is displayed. This is much faster. Further points of immission can then be added to the display. If the display of many glare times is expected to take a long time, a warning is displayed before drawing.

- Action radius: The **action radius** parameter of photovoltaic modules will now be used. If the distance of a module to an immission point (IP) is greater than the action radius of the module, this module cannot generate glare at this IP.
- The **identifier** parameter of a photovoltaic module is no longer available, as the identifier is not used in any way for photovoltaic modules.

## Comfortable 3D Viewer

Some display options of the **comfortable 3D Viewer** can now be set when it is called up. Previously, this had to be done in the 3D Viewer itself, which then restarted.



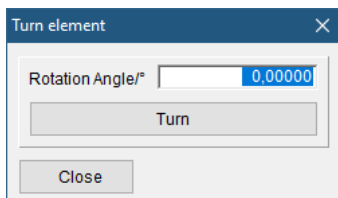
## List of recently used project files

The last entry in the project history list is now the "Edit list" entry. This can now be used to immediately open a dialog with which the history list can be edited.

**Note:** Removing a project from the history list does **not** delete the associated project file.

## Rotate element

The dialog for rotating an element has been simplified. You can now enter the desired rotation angle in degrees. Multiple consecutive rotations are now possible by clicking the **rotate** button several times.



## Info window

The color of the information window can now be set. The settings are adjusted under the Settings | Environment | Layout tab.

Colour for element information note



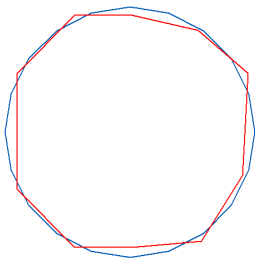
[Building]: HAUS001 Haus Gruppe 0

## Create circle macro

Several functions have been added to this macro:

A circle can now also be drawn around a point element, which serves as the center of the circle. The user can enter the radius and number of corners (and also the center point).

A closed polygon can be rounded off.



A not really round polygon (here red) is rounded with the macro: Create circle. (here in blue)

**Note:** These functions can be used, for example, to create "circular reflectors" (walls, houses) as they can be used in the new ISO 9613-2.

## List of directivities

Some internally defined directivities (e.g., the speaker in the room) were not previously listed in the list of directivities (IMMI). The introduction of directivity for fireplaces in accordance with ISO 9613-2:2024 was taken as an opportunity to update the list of directivities and display all—including internal—directivities.

No.	Name	Directivity type	Type
1	Chimney according to ISO9613-2, 202.	rotationally symmetrical	internal
2	Speaker in the room	rotationally symmetrical	internal
3	for track according to OS5011	rotationally symmetrical	internal
4	Directional correction for components	rotationally symmetrical	internal
5	Directional correction for openings	rotationally symmetrical	internal
6	Self-screening of buildings	rotationally symmetrical	variable
7	ÖAL28: flexible components	rotationally symmetrical	variable
8	ÖAL28: Openings	rotationally symmetrical	variable

Buttons: Edit ... Add ... Delete Documentation Save Open

The directional effects marked as **internal** cannot be edited.

## Numerical input fields

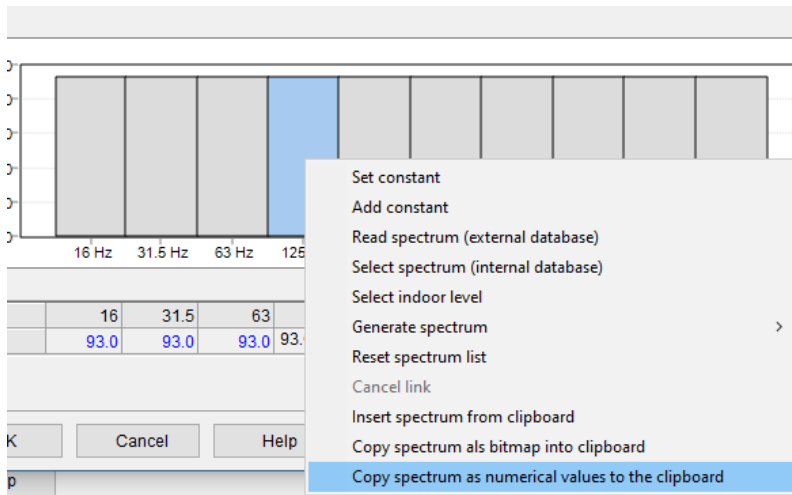
The numerical input fields can now be changed visually and adapted to the current, more modern style:

- Number display in a modern font
- Flat input fields, without 3D frame.

These settings can be adjusted on the "Settings/Environment/Program interface" page.

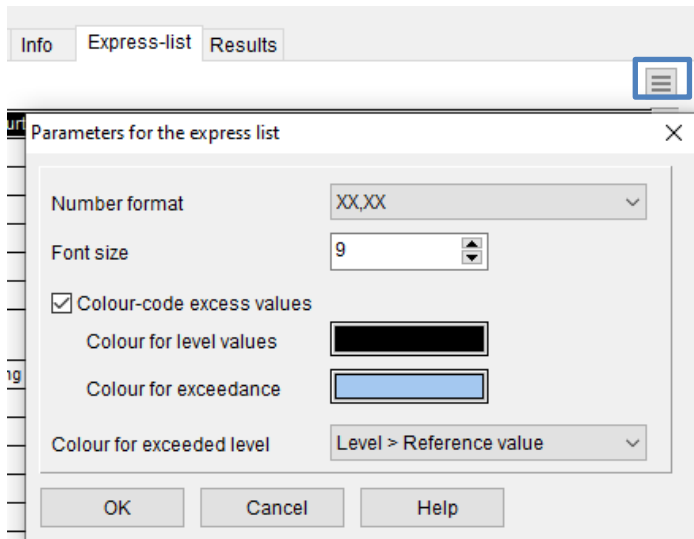
## Copying spectra to the clipboard

The numerical values of the spectrum can now be copied to the clipboard in the input dialog of the spectra.



## Express results list

The display of the results in the express list can now be controlled via parameters. You can access the dialog for these parameters via a button on the right above the list display.



- **Number format:** defines the number format.
- **Font size:** Font size of the express list. The font corresponds to the program-wide text font.
- **Highlight guide values in color:** If an assessment is set, guide values can be specified for the immission points. Colors can be specified to display the results above or below the guide value.

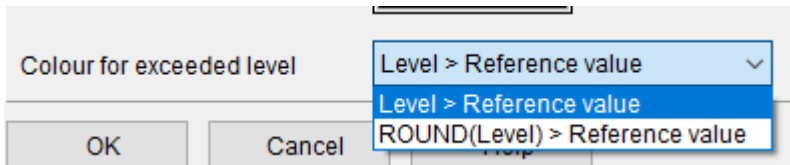
Guide value exceeded if: Here you can set when the guide value is considered to have been exceeded.

- As soon as the **calculated** value is above the guide value.
- As soon as the **calculated and rounded** value (after rounding up or down: see number format) is above the guide value.

## Shortlist: Guideline value exceedances

As with the express list (see previous section), you can now also set when a guideline value is considered to have been exceeded for the shortlist.

In the shortlist options, under **color selection**, you can now select when and how the guideline value should be highlighted in color.



## Corrections

- **QSI export of elevation points:** This export didn't work in version 2024. It is now possible to export elevation points again.
- **Report manager:** The position of the scale on the report pages was not always correctly adopted from the settings. Now, the display is correct again.
- **Pairing key figure:** If key figures larger than 32768 were used to pair buildings and walls, numerical errors occurred during the calculation. It is now possible to use larger numbers.
- **Glare times of the solar modules:** If two different variants were calculated one after the other, the previously calculated glare times were not reset to zero for all solar modules. Solar modules that did not belong to the calculated variant were also listed in the results. (Their glare times are then zero if they are reset correctly)

Only modules that belong to the calculated variant are now listed in the results lists.

- **Memory shortage in the photovoltaic module:** When calculating a larger number of immission points (more than 1000 IPs), the calculation could be aborted during the calculation due to a lack of memory. This problem has now been fixed.
- **RVS – Road Austria:** If a new traffic class was defined (user defined), its name was not applied correctly.
- **Notes field for elements:** This field could previously only hold 1024 characters. Now 1 million characters are possible. (☺)
- **Digital terrain:** A warning is issued before the calculation if a project uses a digital terrain model and also contains elevation points or contour lines. The calculation can continue despite the warning.

Note: If a digital terrain model is set, **no** elevation points or contour lines are taken into account for the calculation.

- **Flat-rate multiple reflection for RLS90 and RLS19 roads:** If the flat-rate multiple reflection was set for all roads via the associated macro, a value for this multiple reflection could be entered manually. However, this was not taken into account as the macro controls the multiple reflection. Manual input is no longer possible as long as the values have been set by the macro. The macro function "Set general multiple reflection to 0" can be used to end the effect of the macro and enable manual input again.
- **Level table element:** In the "Level marker" display mode, some colors of the color scale were not displayed correctly. In particular, incorrect displays occurred with color scales where the colors were not defined via a selection from the IMMI color table but with an RGB value. Now, all colors are displayed correctly.
- **Menu: Report/Text field (list output):** This menu item called up an incorrect dialog. The correct dialog is now displayed.
- **Text field (list output):** When printing the list header, the project was output in the "Processor" field and the processor in the "Project" field. The output is now correct.

- Medium and long list: In some cases, the application could crash if the list was displayed several times in succession. The error has been fixed.

**If you have any questions, please feel free to contact us:**

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