HEXAGON

HxGN EAM OpenCAD Pre-Check

User Guide

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Introduction

HxGN OC CAD PreCheck is the new OpenCAD Client application whose primary mission is to serve HxGN EAM community by ensuring all drawings are fit for use. Before this, users could ingest any drawing, without any preliminary screening, leading to errors in uploading or displaying.

The application's operation is simple: the selected drawings undergo a series of automatic checks at the end of which the results of the checks are shown.

For some types of checks, in case of a negative outcome, the user can start an automatic correction phase to solve them.

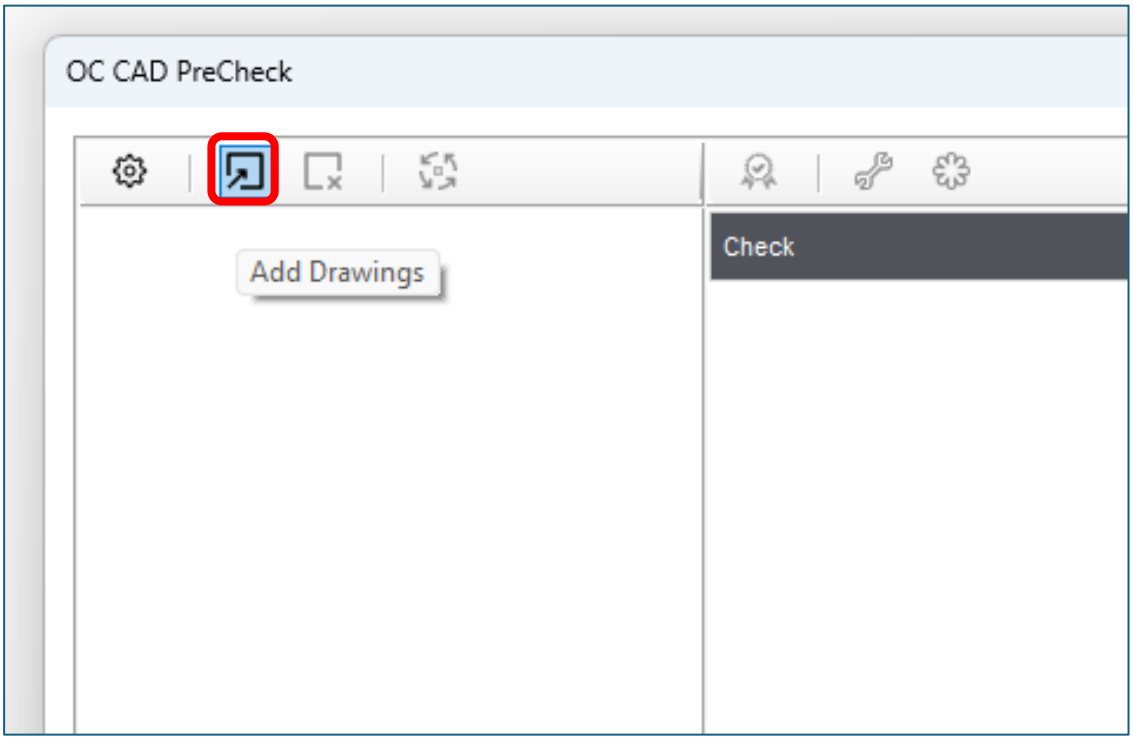
At the end of the correction phase, if all the checks have been successful, the user can save the drawing which is now certified to be uploaded into HxGN EAM presumably without problems.

OC CAD PreCheck is a Windows application, independent from other HxGN EAM Apps, which doesn't require any login in fact the checks performed are purely graphic and follow the logic and needs of HxGN EAM/OpenCAD.

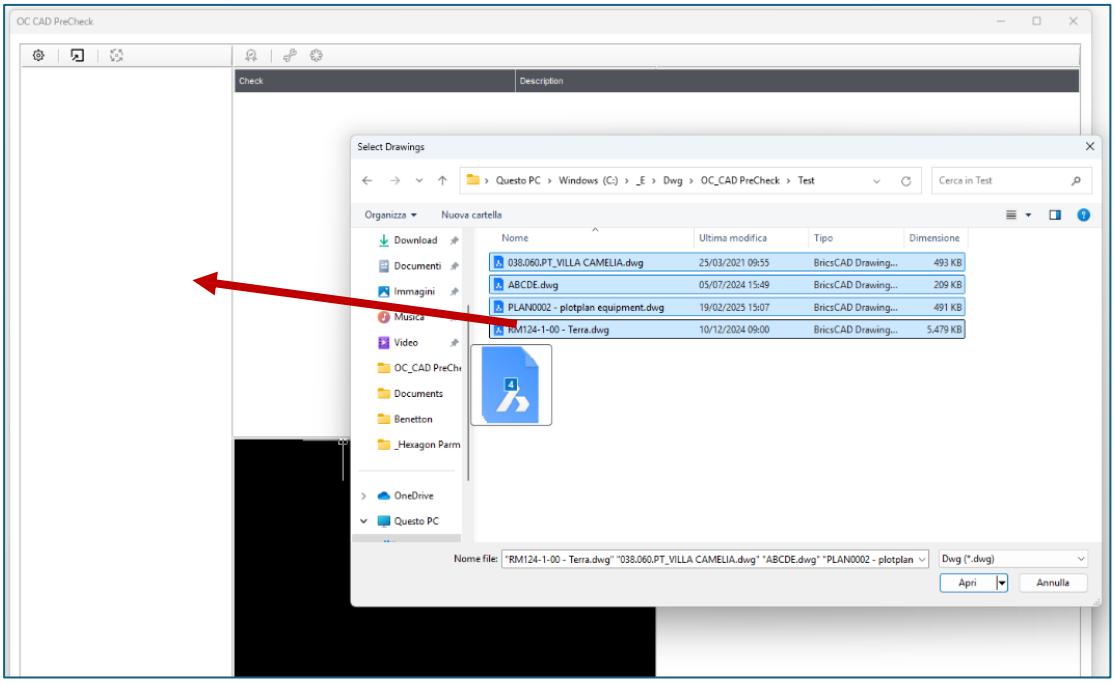
OpenCAD Pre-Check App is installed on client computers along with the OC Utility App.

How to check drawings

Please click the “Add Drawings” button to add DWG files to the drawings list.



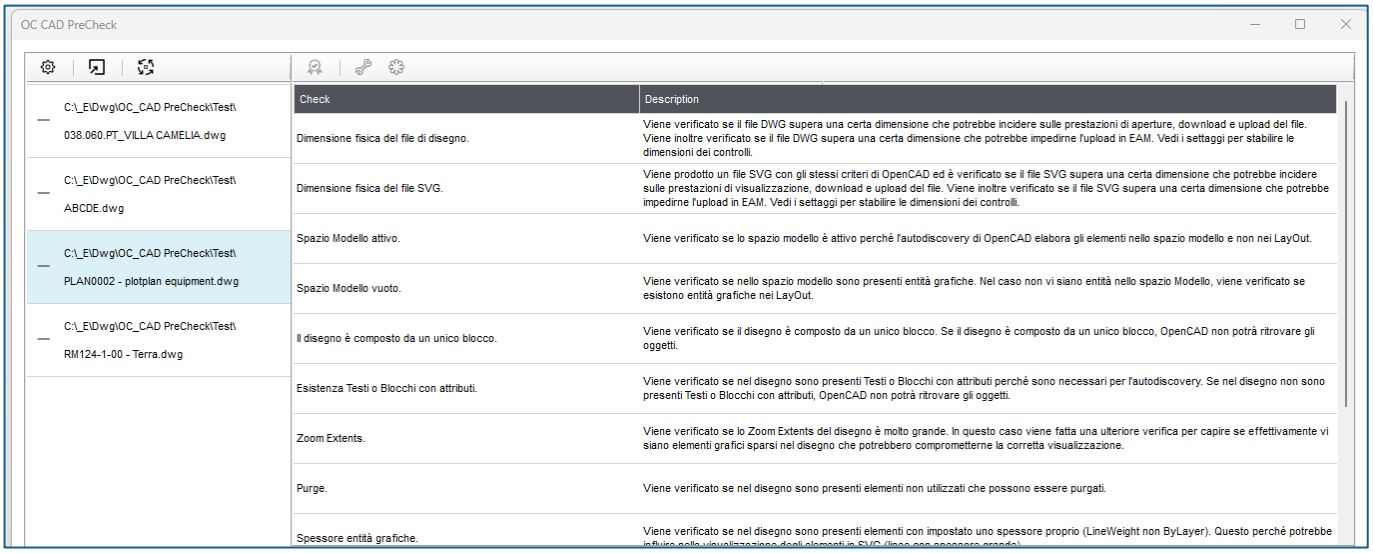
Files can be selected individually or by dragging them into the left section of the main window. The selected documents, along with their file paths, will appear in the file list.



To exclude a drawing from the file list, please select it and press the “Delete” key on your keyboard.
To remove all drawings from the list, click the “Remove All Drawings” button.

Note: The files will not be deleted from your system.

By selecting one of the files, the list of checks will appear. Of course the list is fixed but new checks may be implemented in future versions.



Types of checks

Two types of issues have been identified: Warnings and Errors.
Warnings are minor issues, not blocking, that could affect the performance in uploading/displaying drawings.
Errors are blocking issues that could prevent the drawing to be uploaded.

For some types of checks, if the outcome is negative, the user can start an automatic correction process to solve the problem.

Below is the list of checks performed in the current version.

N	Description	Problem detected	Type of problem	Configurable	Type of Correction	Note
1A	DWG model size	The system checks if the DWG file exceeds a certain size that could impact performance during opening, downloading, or uploading (for example, 10 MB).	WARNING	Yes	Depending on the case, it can be automatically corrected, or it may require human intervention.	If the DWG file exceeds the warning size threshold, a test is performed to check whether using a Wblock resolves the issue. If the Wblock is below the warning size threshold, the user is prompted to create a Wblock, and the warning is marked as 'Automatically correctable'. Otherwise, it remains 'Not automatically correctable'. If the Wblock is created, the user is given the option to import and process the newly created Wblock.
1B	DWG model size	The system checks if the DWG file exceeds a certain size that could prevent it from being uploaded to EAM (for example, 75 MB).	ERROR	Yes	Depending on the case, it can be automatically corrected, or it may require human intervention.	If the DWG file exceeds the error size threshold, a test is performed to check whether creating a Wblock resolves the issue. If the resulting Wblock does not exceed the error size threshold, the user is prompted to create a Wblock, and the error is marked as 'Automatically correctable'. Otherwise, it remains 'Not automatically correctable'. If the Wblock is created, the user is given

						the option to import and process the newly created Wblock.
2A	SVG file size	An SVG file is generated (using the same OpenCAD criteria) and it is checked whether the SVG file exceeds a certain size that could impact performance during viewing, downloading, or uploading (for example, 10 MB).	WARNING	Yes	Requires human intervention	(*) In the check results, it is indicated that turning layers on or off can affect the size of the SVG file. Changing the layer visibility may help the user resolve the issue. After turning layers off, running the SVG check again allows the user to verify any changes in the SVG file size. If the system is configured to generate SVGs with all layers turned on (see installation parameter SVGLAYON = YES), then changing layer visibility will not impact the SVG size, and no suggestion will be shown to the user.
2B	SVG file size	The system checks if the SVG file exceeds a certain size that could prevent it from being uploaded to EAM (for example, 75 MB).	ERROR	Yes	Requires human intervention	(*) In the check results, it is noted that turning layers ON or OFF can affect the size of the SVG file. Adjusting the layer visibility may help the user resolve the issue. After turning off certain layers, running the SVG check again allows the user to see any changes in the SVG file size. If the system is configured to generate SVGs with all layers enabled (see installation parameter SVGLAYON = YES), then changing layer visibility does not affect the SVG size, and no suggestion will be shown to the user.
3	Active Model Space	The system checks if Model Space is active because OpenCAD's autodiscovery processes elements in Model Space, not in the Layouts.	ERROR	No	Automatic correction available	Double-click to activate Model Space.

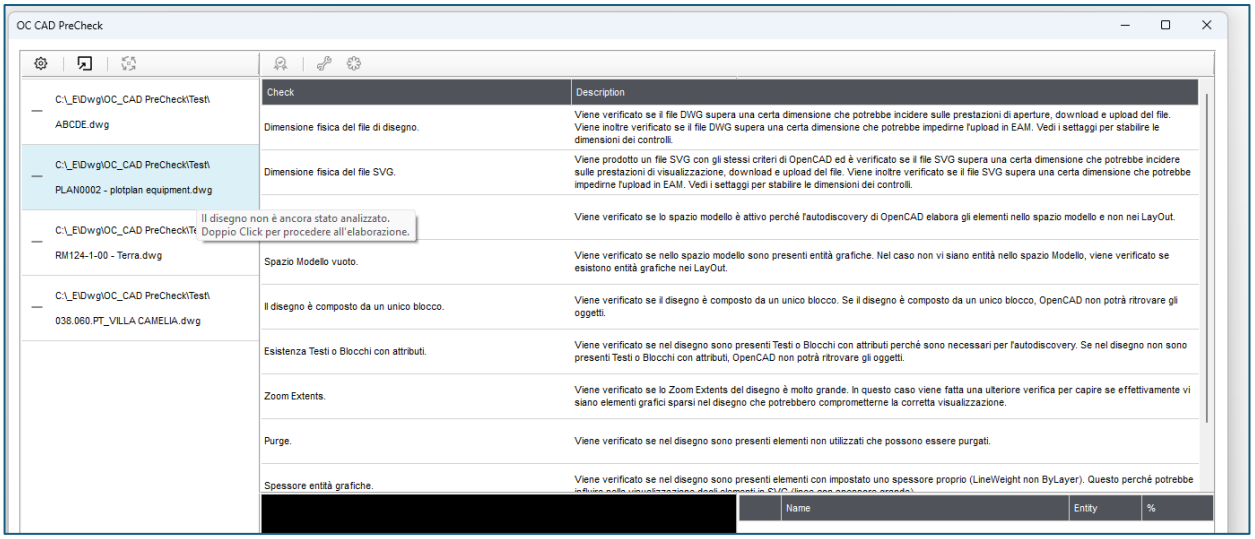
4	Empty Model Space	The system checks if there are graphical entities in Model Space. If no entities are found in Model Space, it then checks for graphical entities in the Layouts.	ERROR	No	Requires human intervention	If no graphical entities are found in Model Space, an Error is shown. However, if entities are detected in the Layout, the user is informed that they likely should be moved to Model Space.
5	The drawing consists of a single block.	The system checks if the drawing consists of a single block. If the drawing is made up of a single block, OpenCAD will not be able to locate the objects.	ERROR	No	Automatic correction available	Double-click to explode the block.
6	Existence of Texts or Blocks with Attributes.	The system checks if the drawing contains Texts or Blocks with attributes as they are required for autodiscovery. If no Texts or Blocks with attributes are found in the drawing, OpenCAD will not be able to locate the objects.	WARNING	No	Requires human intervention	
7	Zoom Extents	The system checks if the Zoom Extents of the drawing is very large. In this case, an additional check is performed to determine if there are any scattered graphical elements in the drawing that could affect its proper display.	WARNING	No	Requires human intervention	The user can manually override the warning by double-clicking on the check, marking it as OK.
8	Purge	The system checks if there are unused elements in the drawing that can be purged. This check is done by performing a purge to see if it results in a significant	WARNING	No	Automatic correction available	Double-click to run the Purge command.

		reduction in the DWG file size. If purging the drawing reduces the file size by at least 100 MB, a warning is displayed.				
9	Graphic Entity Thickness	The system checks if there are elements in the drawing with a custom line weight (LineWeight not set to ByLayer). This is important because it could affect the display of elements in the SVG (such as lines with large thickness).	WARNING	No	Automatic correction available	Double-click to set the ByLayer LineWeight for all elements. (TIP: This can be further investigated by using the SVG preview function)
10	Xref / Immagini	The system checks if any Xrefs and Images in the drawing have been uploaded correctly. This does not conflict with OpenCAD's logic, but if there are any unloaded Xrefs or Images, warnings will be generated when inserting the new drawing.	WARNING	No	Automatic correction available	Double-click to remove unloaded Xrefs or Images.
11 A	Spaces	The checks related to the Warnings are: -the existence of polylines that do not contain codes -the existence of codes not included in polylines	WARNING	Yes	Requires human intervention	Double-click to open a window for detailed analysis of the warnings.
11 B	Spaces	The checks related to the Errors are: -the existence of the polyline and code layers -polylines and codes within the configured layers	ERROR	Yes	Requires human intervention	Double-click to open a window for detailed analysis of the errors.

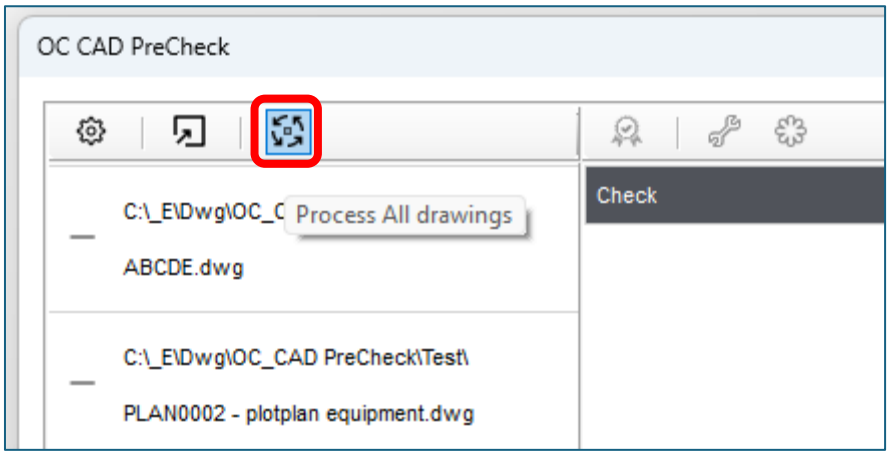
		-multiple codes within the same polyline				
(*)	Layer Management	A data grid lists the layers present in the drawing. For each layer, the status (on/off), the number of graphic entities present on the layer, and the percentage of entities relative to all layers in the drawing are shown. Layers can be turned on or off by double-clicking the light bulb icon.				

How to process drawings

Drawings can be processed individually by selecting them from the model list on the left.

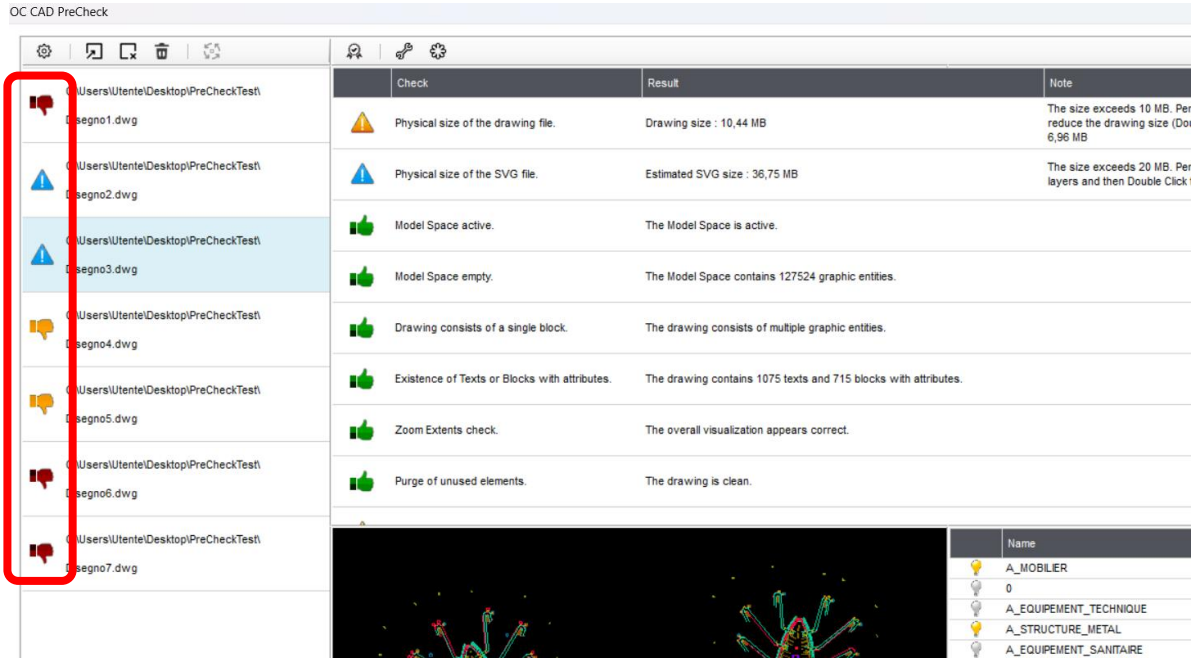


In case of multiple drawings, an automatic procedure can be triggered by clicking the “**Process All Drawings”** button.



Processing results

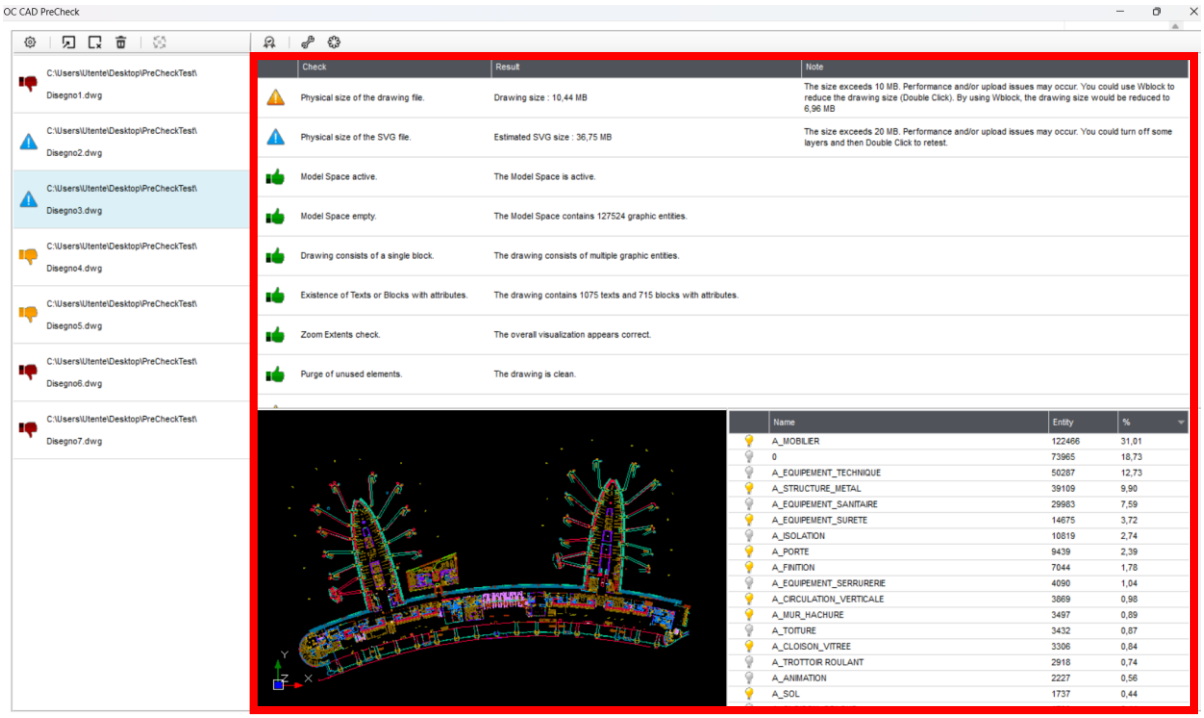
As the process is completed, a symbol representing the overall status of the drawing based on the obtained results will be displayed in the drawing list (the worst case among the checks).



Type of Detected Problem	Type of Correction	Symbol
ERROR	Not automatically correctable by the application	
ERROR	Automatically correctable by the application	
WARNING	Not automatically correctable by the application	
WARNING	Automatically correctable by the application	

Note: The green 'thumbs up' indicates that the drawing/single check has passed successfully.

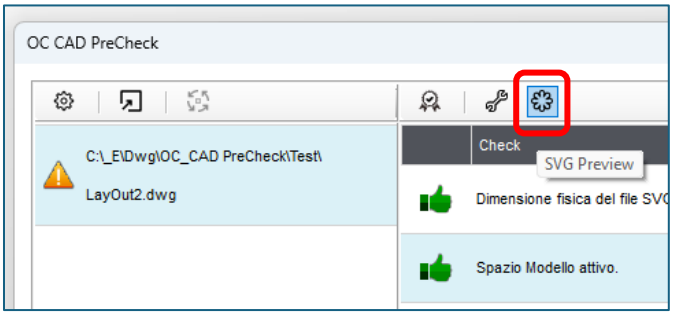
By selecting any drawing individually, you can instead view a detailed report.



In particular:

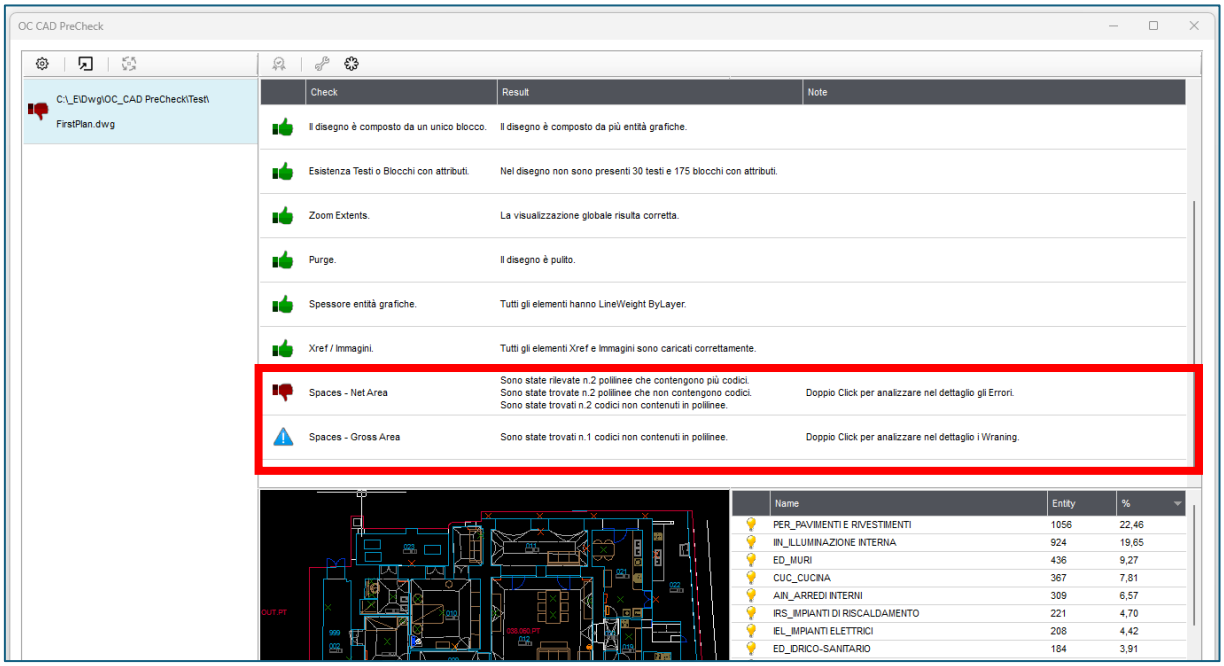
- In the upper table, the executed tests and their results are visible. For each issue, a detailed description and suggested countermeasures are provided under the “Notes” column. For some issues, in case of negative outcome, an automatic correction may be available;
- at the bottom-left, the drawing is displayed;
- at the bottom-right, the drawing layers are listed. For each layer, the status, the number of graphic entities present on the layer and their relative percentage are indicated. Each layer can be turned ON or OFF by clicking on the lightbulb, affecting the overall drawing size.

Depending on the test results, the SVG preview may be useful to preview the results that will be visible in OpenCAD. This can be done by clicking the "SVG Preview" button.



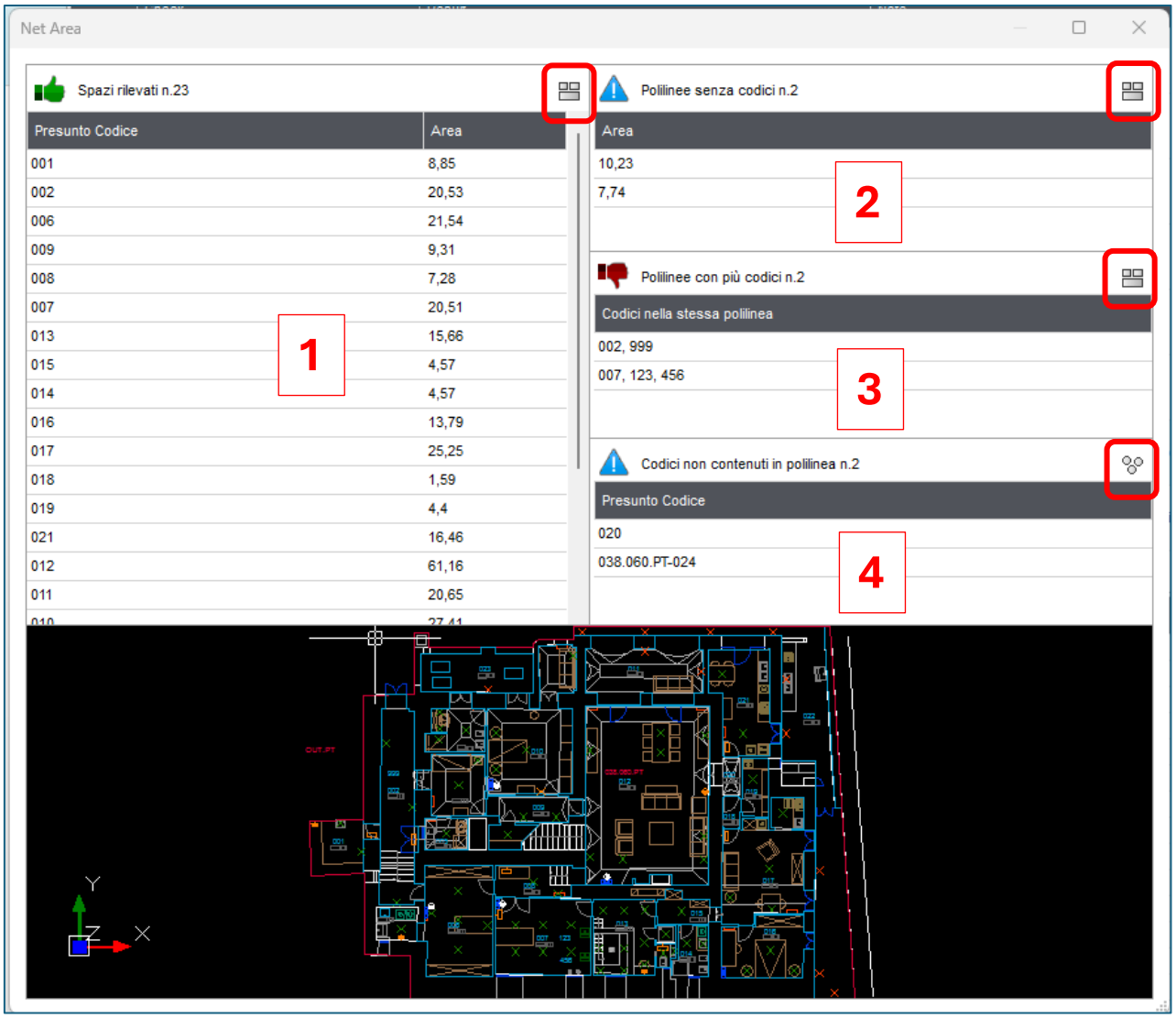
Check spaces

If space checking is enabled (see configuration), the verification results will include as many rows as the types of surfaces enabled for checking.



Errors or warnings related to spaces cannot be automatically corrected but, by double-clicking on the row of the check result, a dialog will open allowing the user to inspect the anomalies in detail and manually correct them.

For each grid in the dialog, selecting a record will zoom in on the relevant graphic element.



1. The left grid lists the valid spaces (polylines from the configured "polyline" layer that contain text or blocks from the configured "code" layer). For each space, the presumed code and area (in drawing units) are displayed.
   By clicking the "Highlight detected spaces" button, the detected surfaces can be visually displayed.

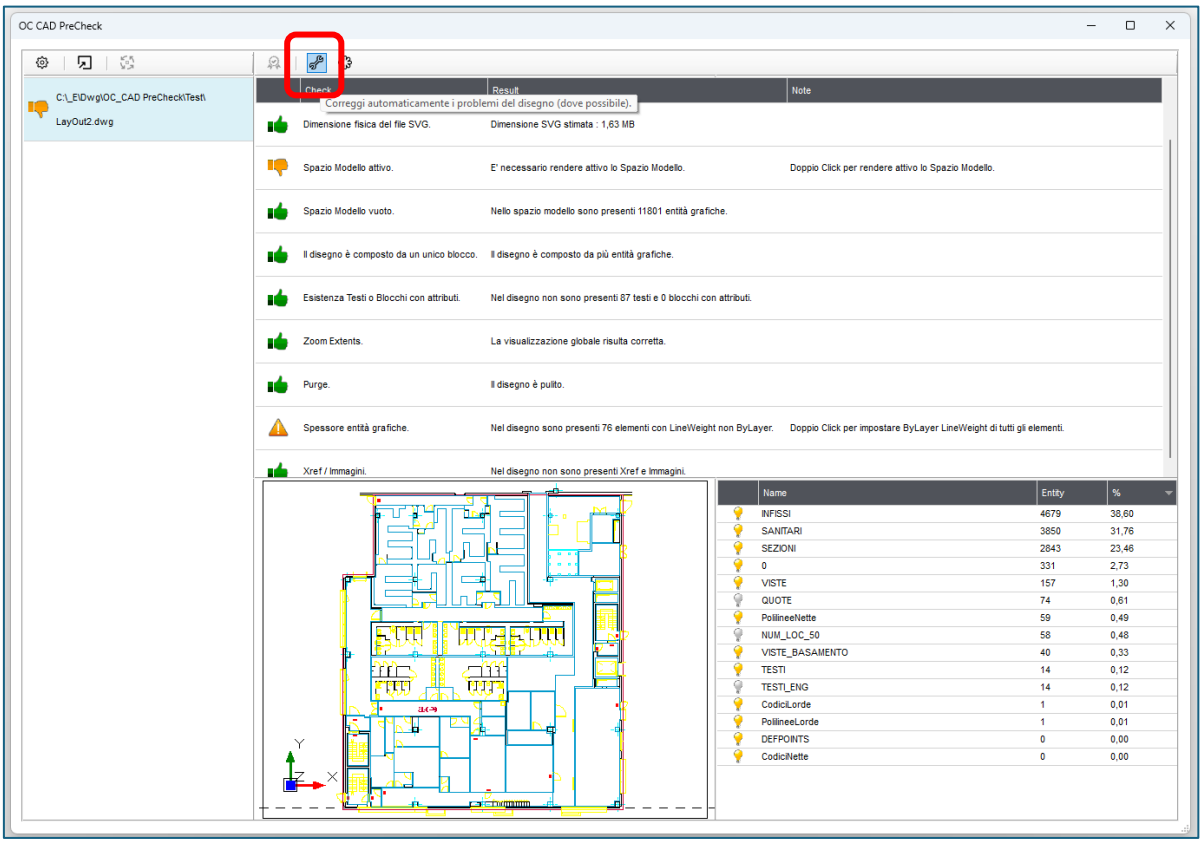
2. In the top-right grid, any polylines from the configured "polyline" layer with warnings are listed. These polylines do not contain text or blocks from the configured "code" layer.
   By clicking the "Highlight polylines without codes" button, the polylines can be visually highlighted.

3. In the central-right grid, any polylines from the "polyline layer " containing more than one text or block are listed. For each polyline, the detected codes are displayed.
   By clicking the "Highlight polylines with multiple codes" button, these polylines can be visually highlighted.

4. Finally, In the bottom-right grid, any text or blocks from the "code layer" that are not contained within any polylines from the "polyline layer " are listed.
   By clicking the "Highlight codes not contained in polylines" button, text or blocks can be visually highlighted.

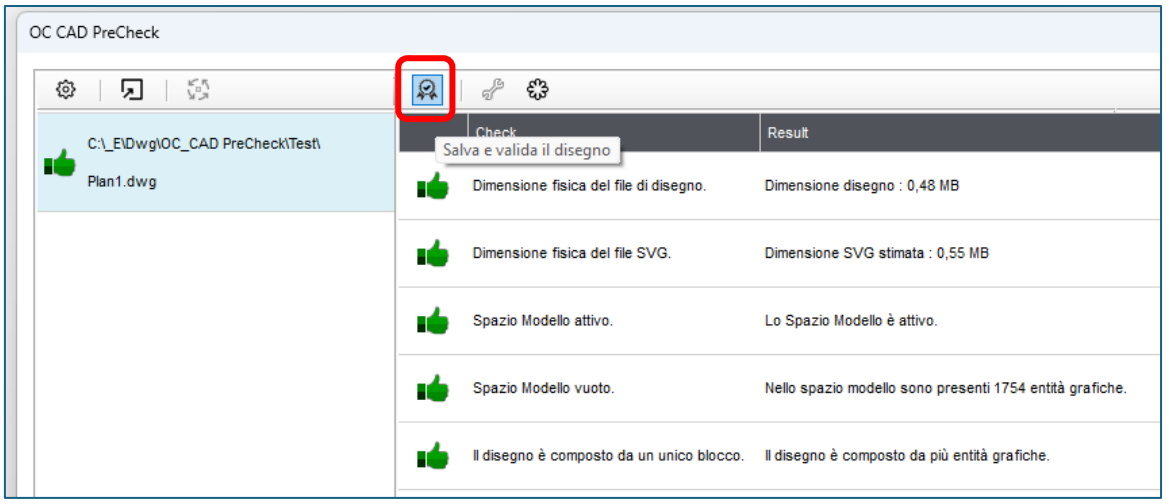
How to resolve issues

In case an issue can be automatically addressed, this can be done by double-clicking on the corresponding record. Once the automatic solution has been applied, a confirmation message will appear.
If multiple issues are detected, they can all be automatically resolved at once by clicking on "Automatically fix the drawing warnings."

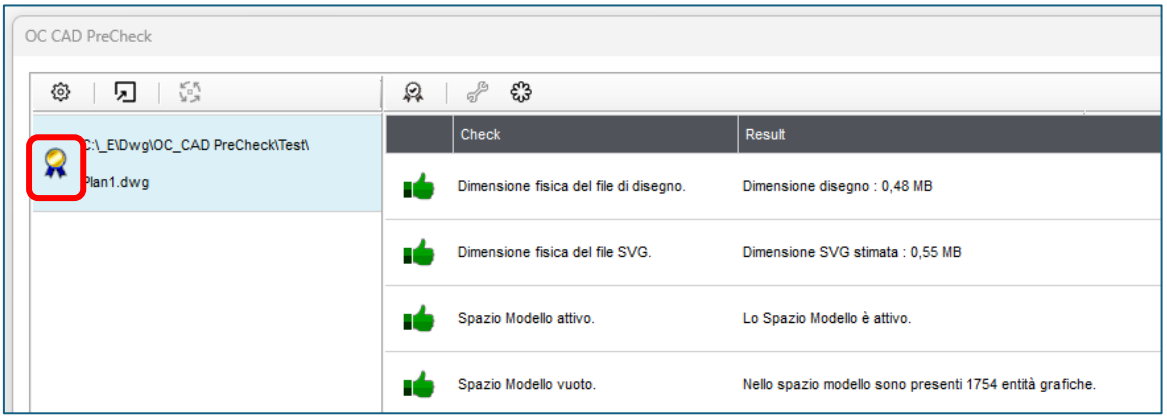


How to save the output format

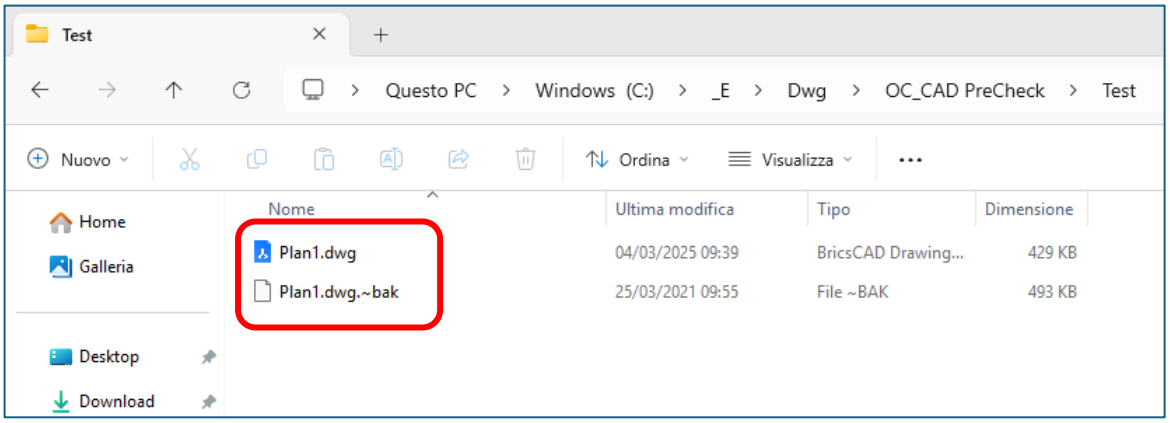
Once the Pre-Check process is complete and all issues have been addressed, the drawing output can be saved to apply the changes made.
The drawing is saved by clicking on the "Save and validate drawing" button.
The save button will only be enabled if the drawing is error-free or contains warnings.
If the drawing contains errors, saving will not be allowed.



Once saved, the drawing will be marked as validated.

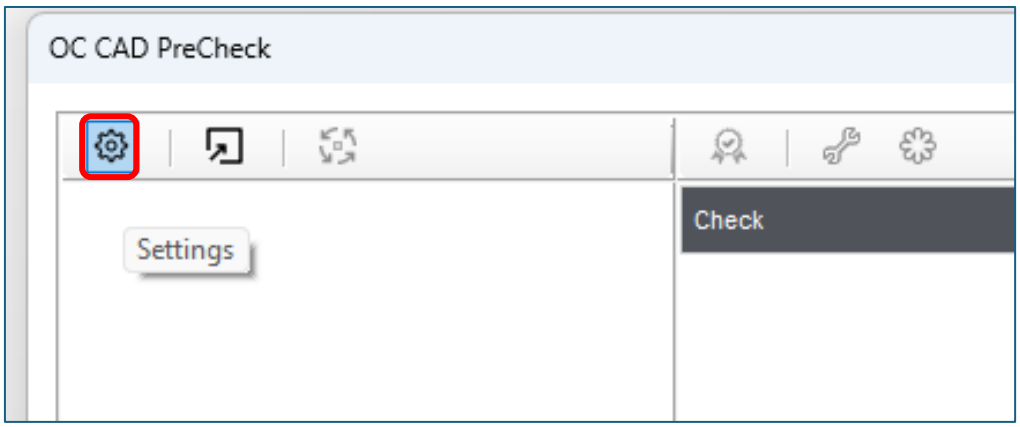


A backup copy of the original file will be created, and the performed changes will be saved in place of the original one.



Pre-Check settings

To change the PreCheck settings, click on the "Settings" button.



In this dialog, the following parameters can be adjusted depending on the tenant configuration and the user's needs.

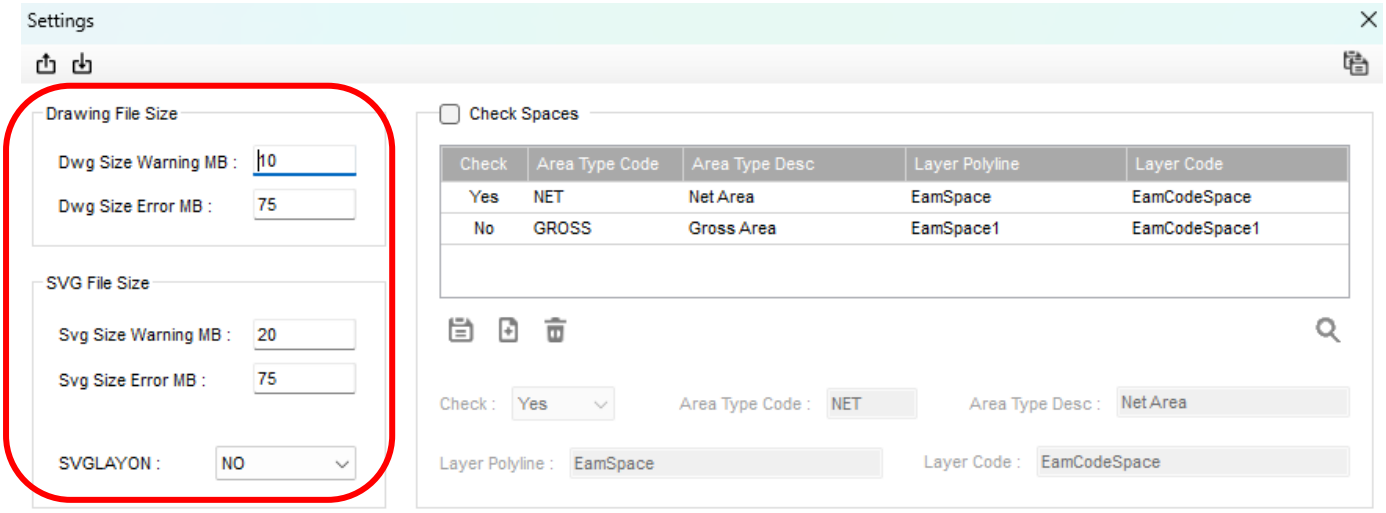
File DWG file size

- **Warning Dwg MB**: The size of the DWG file, beyond which a warning will be generated.
- **Error Dwg MB**: The size of the DWG file, beyond which an error will be generated.

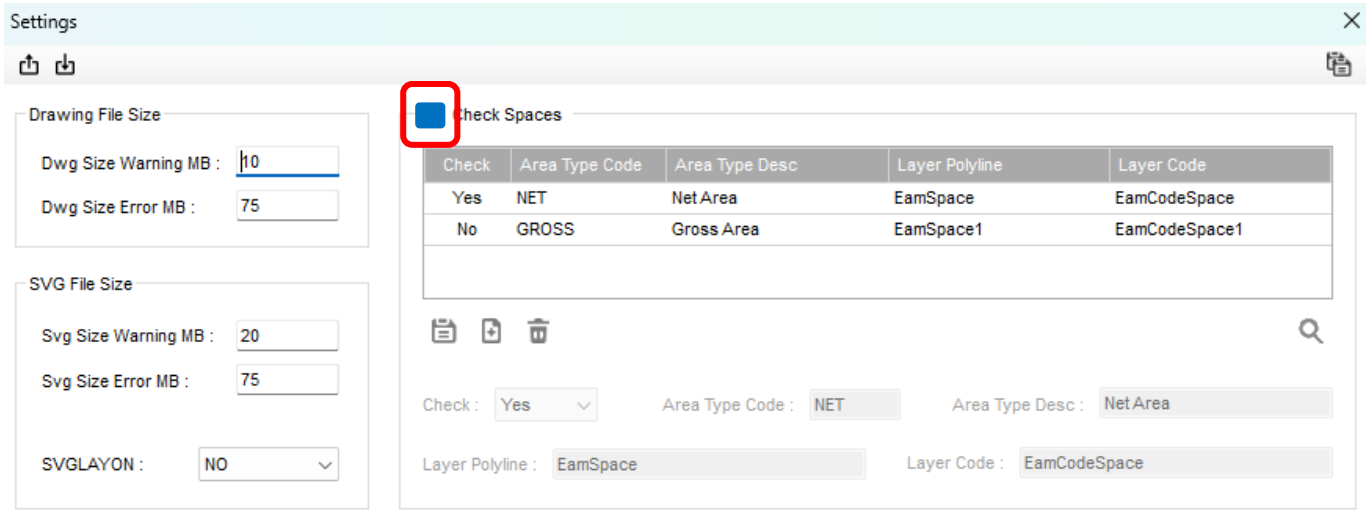
SVG File size

- **Warning Svg MB**: The size of the SVG file, beyond which a warning will be generated.
- **Error Svg MB**: The size of the SVG file, beyond which an error will be generated.

SVGLAYON: Mode for generating the SVG file. If set to YES, the SVG will be generated with all layers turned on (see the SVGLAYON installation parameter in OpenCAD).



Check Spaces

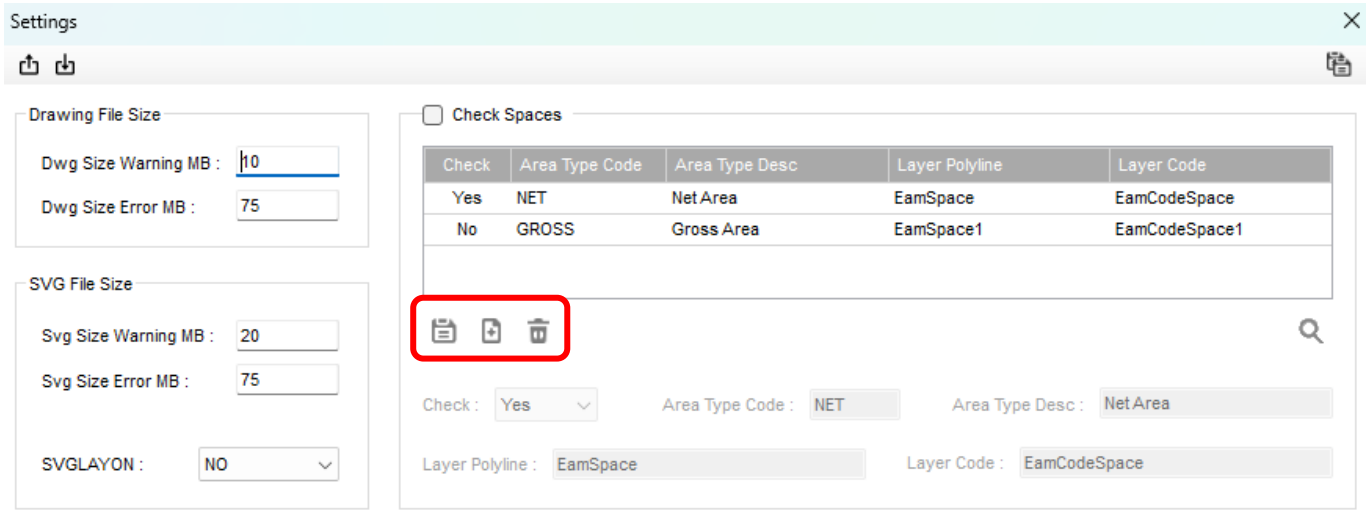


The verification of spaces can be enabled via the "Check Spaces" checkbox.

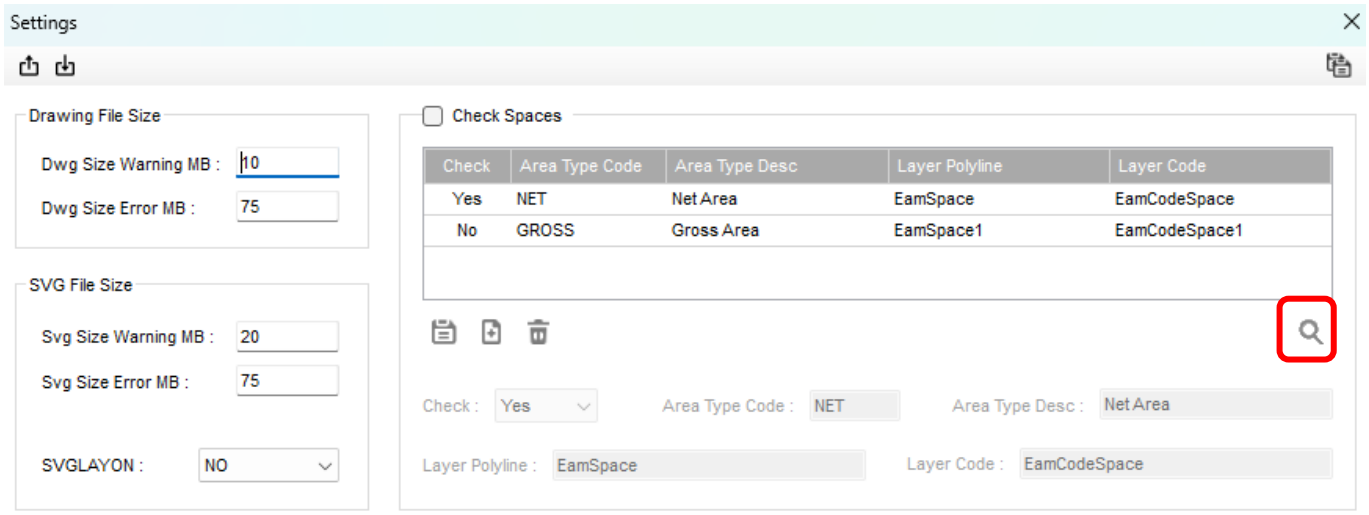
The listed Area Types must reflect those configured in HxGN EAM.
By default, the standard ones are provided.
For each Area Type, the following must be specified:

- **Check**: to enable the individual Area Type for verification.
- **Area Type Code**: Area Type code (assigned automatically).
- **Area Type Desc**: Area Type description.
- **Layer Polyline**: polyline layer for the Area Type.
- **Layer Code**: code layer for the Area Type.

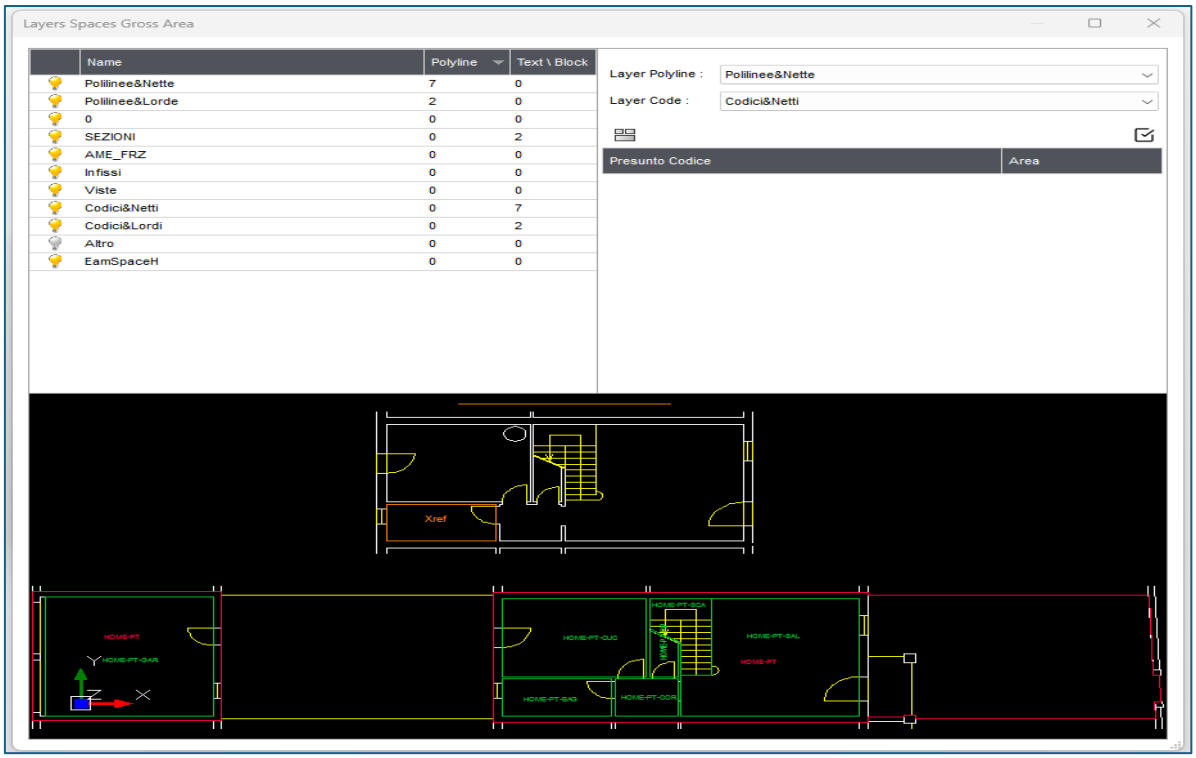
To add a new Area Type, use the "Add Area Type" button, and after entering the required information, save it by clicking the "Save Area Type" button.
To delete an existing Area Type, select the desired record in the grid and then click the "Delete Area Type" button. Default Area Types (NET, GROSS) cannot be deleted.
To edit the details of an existing Area Type, select the desired record in the grid, make the necessary changes, and then save them by clicking the "Save Area Type" button.



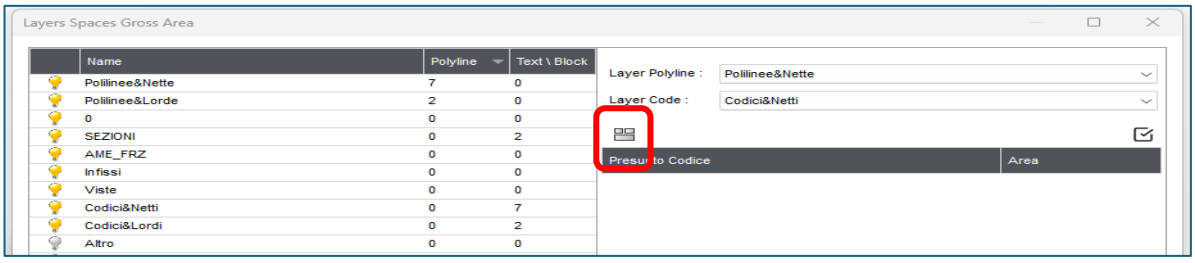
In case the user is not aware of the layer names to be assigned to polylines and codes, those can be found by clicking on "Identify Spaces Layers".

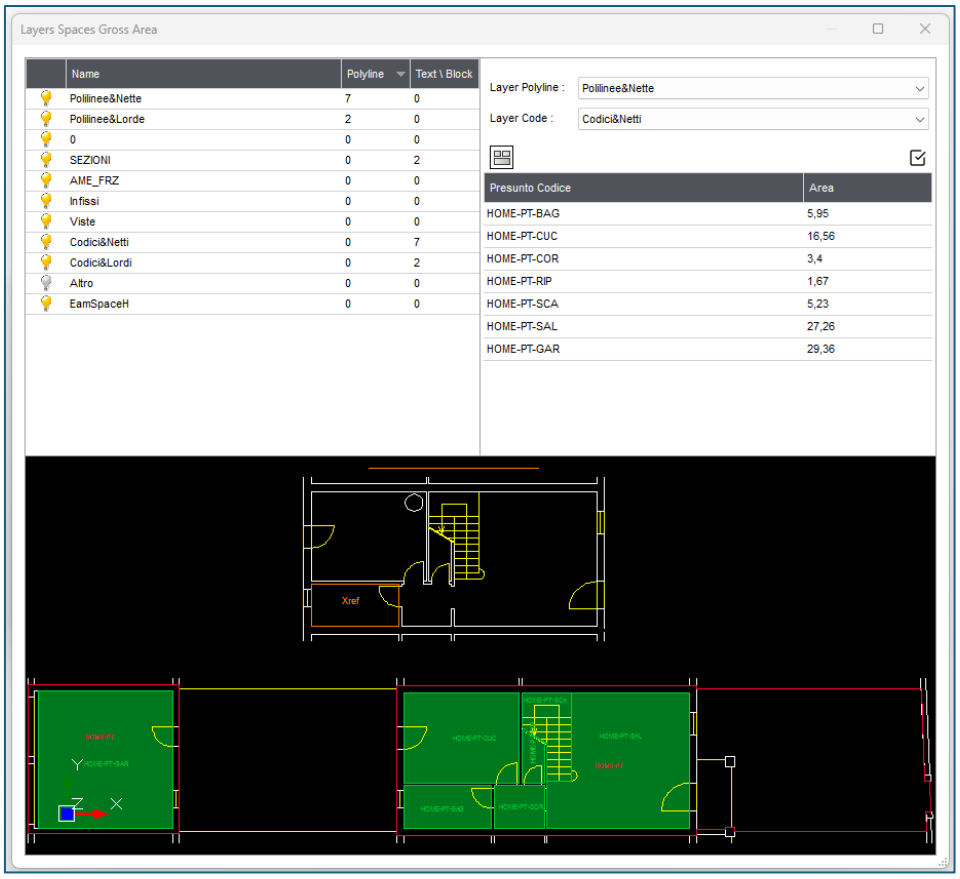


Upon starting this functionality, users will be prompted to select a "prototype" file from which the layer names will be analyzed and extracted. Then, a dialog will open, allowing you to choose the desired layers.

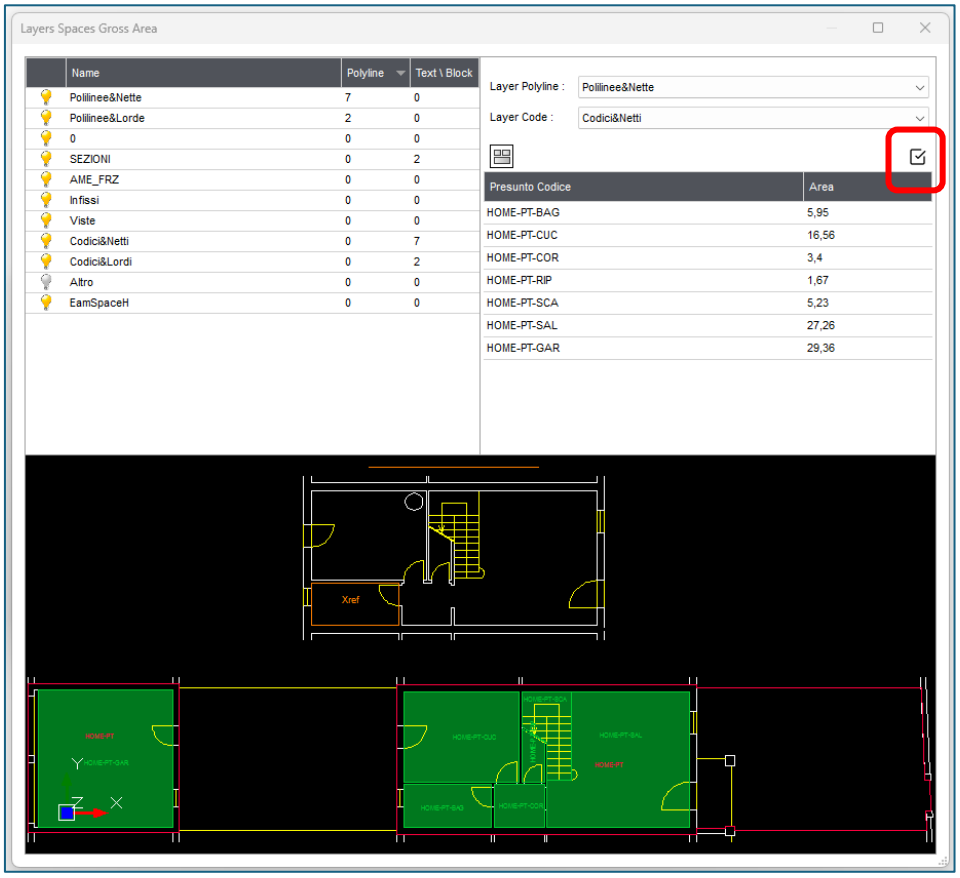


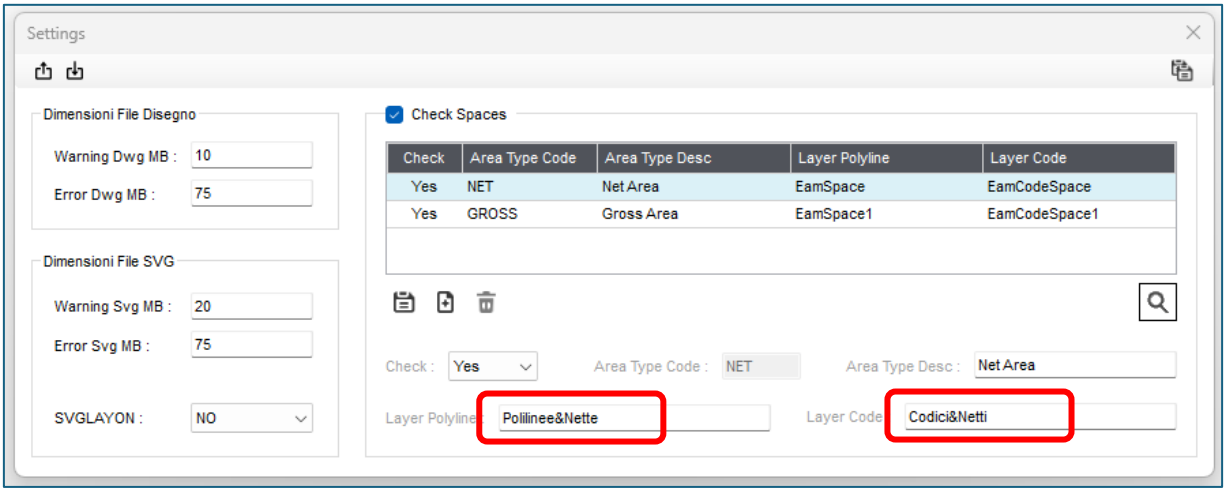
At the bottom section, the previously selected drawing is displayed.
In the left grid, the drawing's layers are listed along with the number of polylines and texts/blocks belonging to each layer.
In the lower right section, users can define the layers that will be considered for the spaces identification.
By clicking on 'Highlight Spaces' and checking the drawing preview, users can verify the validity of the selected layers before proceeding. Any spaces that do not appear highlighted in the drawing—despite being selected—should be excluded from the space calculation.





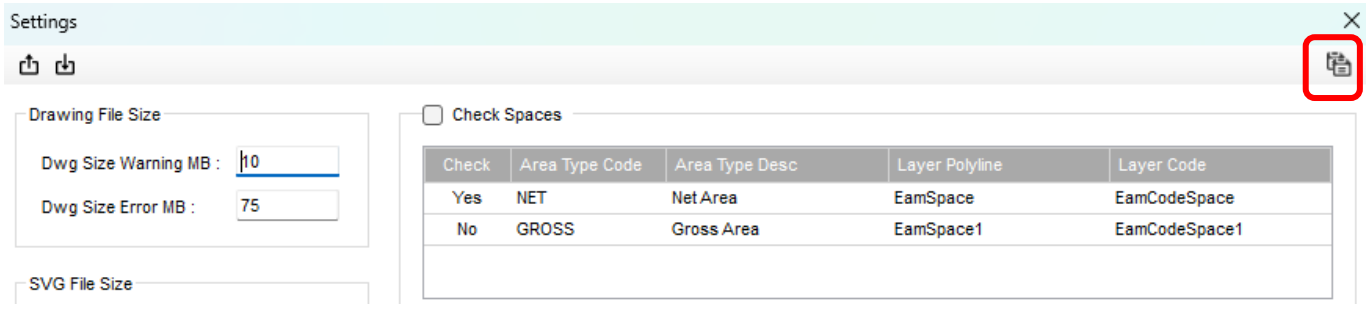
If the user approves the current layer selection for space calculation by clicking 'Accept the selected layers', those layers will be applied to the 'spaces' configuration of the initial Area Type.





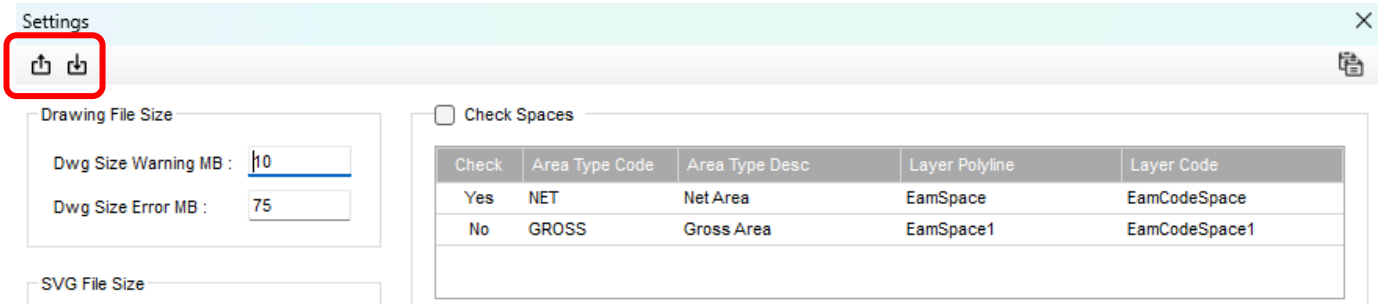
How to save the settings

To apply any changes made to the settings (in any section), you need to save them by clicking the 'Save all settings and close' button.
Note: If the user makes changes and forgets to save before closing the window using the 'X' button, a warning will appear prompting them to save.



Import\Export

If a user needs to share a configuration with others or work with multiple configurations using different data, they can do so using the Import and Export settings feature.
Settings are exported using the 'Export Configuration' button. During the export process, the user will be prompted to enter a name for the file that will contain the configurations. The file will be saved with a '.prc' extension.
Settings are imported using the 'Import Configuration' button. During the import process, the user will be prompted to select a file with the '.prc' extension.


Settings
Drawing File Size
Dwg Size Warning MB :
10
Dwg Size Error MB :
75
SVG File Size
Check Spaces
Check
Area Type Code
Area Type Desc
Layer Polyline
Layer Code
Yes
NET
Net Area
EamSpace
EamCodeSpace
No
GROSS
Gross Area
EamSpace1
EamCodeSpace1