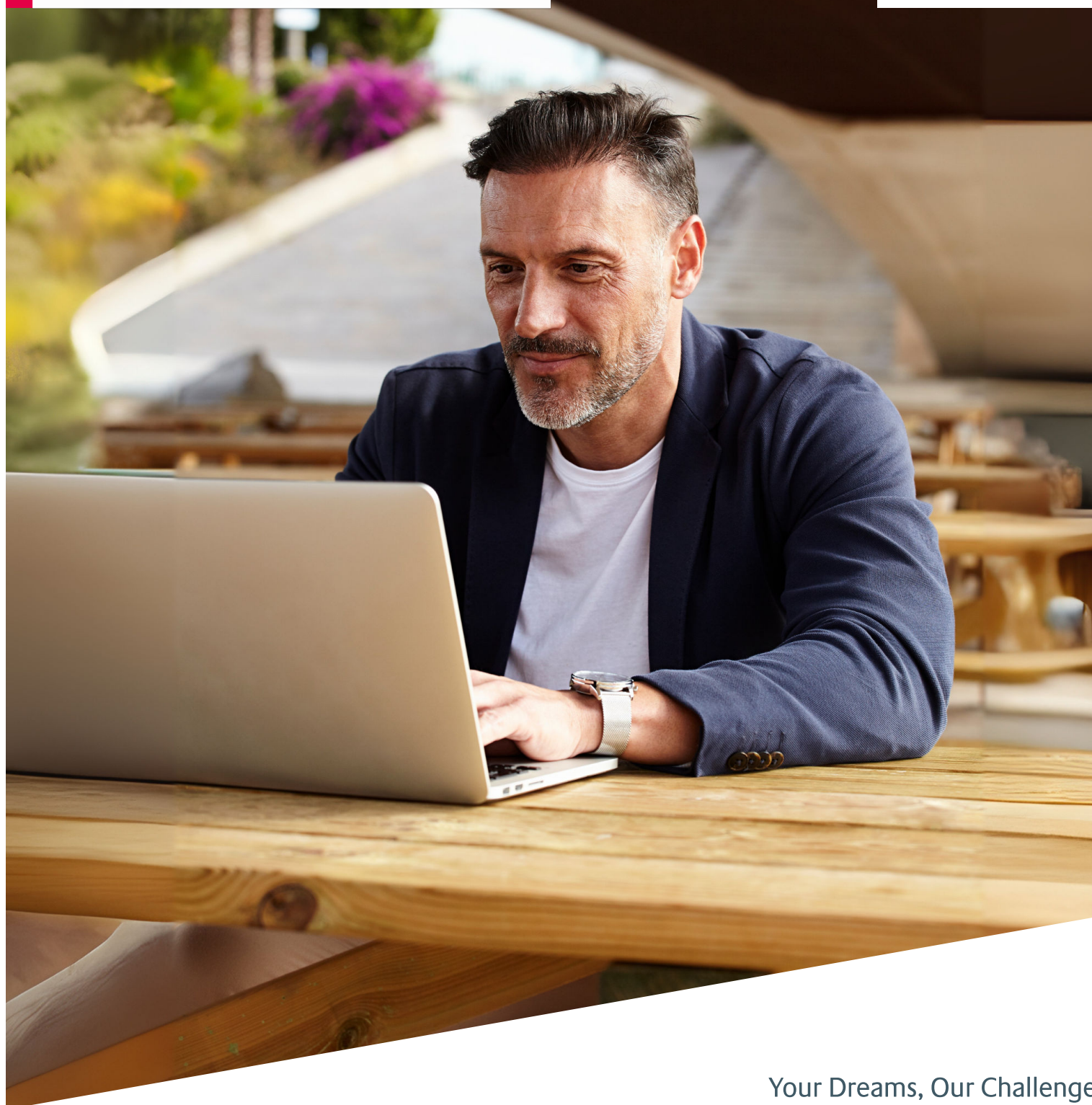


# Glass **Configurator**

The Glass Thickness Calculator,  
to carry out a structural analysis  
of your glass compositions!

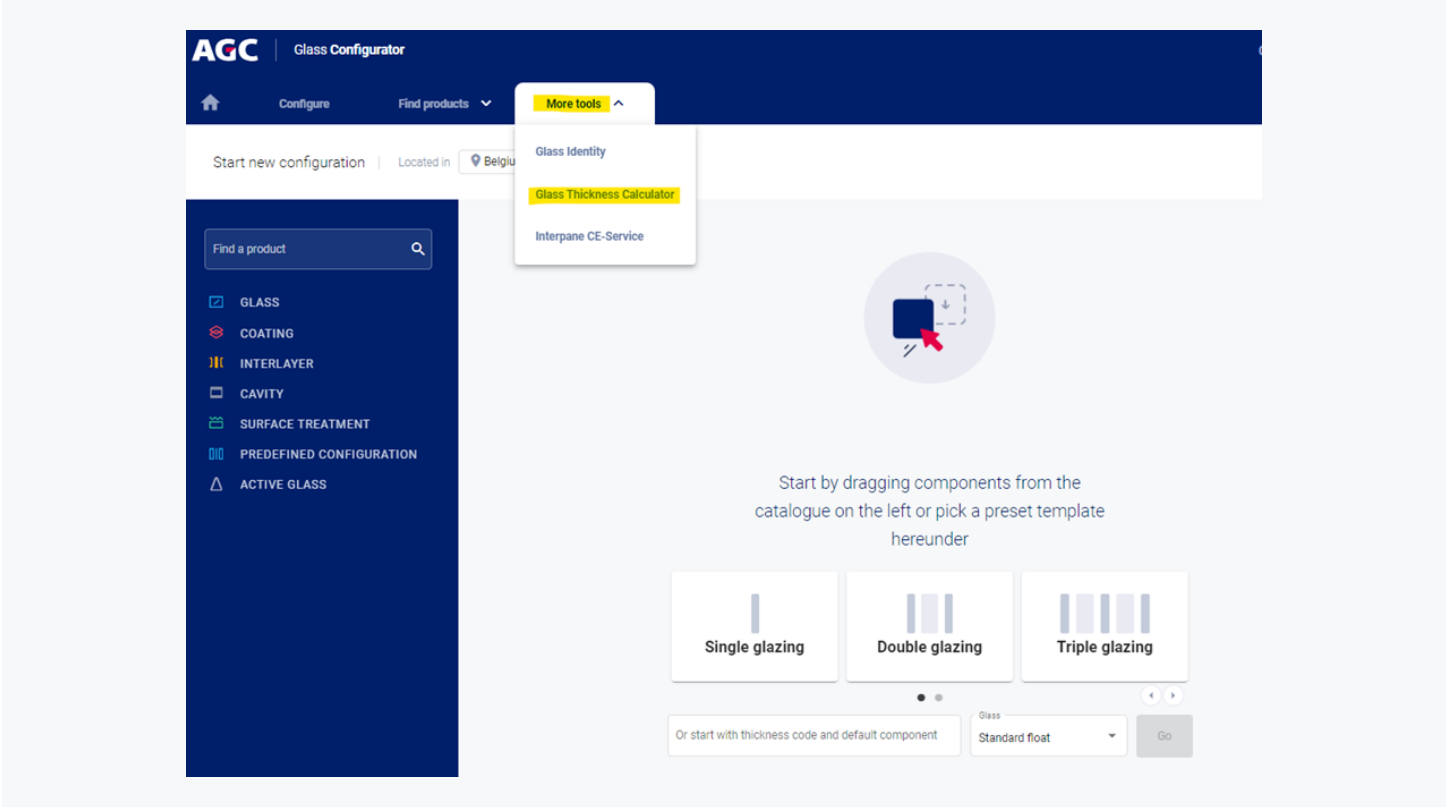
**AGC**



Your Dreams, Our Challenge

The **Glass Configurator** includes a practical tool you can use to check whether your glass compositions are correctly designed for your project. Just fill in key information, such as specific loads and situations, and the tool will return detailed results and produce a downloadable report.

To access the tool, simply go to the main menu of the Glass Configurator, click on **More Tools** and then **Glass Thickness Calculator**.



The **Glass Thickness Calculator** is a linear solver specially designed to perform a structural analysis on facade glazing, roof glazing and interior glass partitions in accordance with standard EN 16612 as well as ASTM standards. The tool was developed in collaboration with Maffei Engineering ([www.maffei.it](http://www.maffei.it)), an international firm specialising in facade and structural engineering. The **Glass Thickness Calculator** can be used to calculate rectangular shapes with all relevant loads and with four load combination methods

1

General Information

Before starting your calculation, you will have to fill in some general information to identity your project:

GENERAL INFORMATION

Project

Hotel Marit

Name

Hotel Marit

Client

John

Description

2 glazings

Location


Brussels


Help

Altitude of the project

100 m


You can then define certain calculation parameters:


**CALCULATION PARAMETERS**
⌵


Help


Standard

EN 16612


Help


Location

Other [EN 1990 (general version)]


Help


Ground snow loads

kN/m²


Help


System of units

International system (mm, kg...)


Help


Strength code

Shortest load duration


Help


Effective thickness code for laminated glass

EET


Help


Load combination for serviceability limit state

Characteristic


Help


IG sealant combination code

Characteristic


Help

Deformation criteria I/X

100


Help

Absolute deflection limit (mm)

50 mm

Reset parameters

This section contains a number of general calculation parameters, including the relevant standard and calculation methods:


- **Strength code:** Select the shortest load duration unless an alternative is permitted in your country.
- **Effective thickness code:** Omega is the typical methodology, but EET will provide more accurate results.
- **Deformation criteria L/x:** EN 16612 allows a value of up to 65 for x. It usually varies between 65 and 300. For L, the value will be either width or height, whichever is lower. These values can be overridden by the absolute deflection limit.
- **Absolute deflection limit:** The maximum value is 50 mm, but it is advisable to lower this value in order to enhance building occupants' feeling of safety.

# 2


## Glazing Description

In this section, you first need to identify the glazing type and its dimensions.

## Glazing description



**GENERAL INFORMATION**




Glazing type  
 GL01-Southern façade


**GLAZING GEOMETRY AND INSTALLATION**

Glass panel width  
 1500 mm

Glass panel height  
 3000 mm

Supported sides 

- 
 Four sides ☒
- 
 Two parallel sides (horizontal) ☐
- 
 Three sides supported ☐

Next, the type of use defines the function of the room adjacent to the installed glass: **Office, Home**, etc. For vertically installed glazing, the installation angle should remain set at 90°. The **Use of Glass** parameter is important for evaluating the correct temperature in the insulated glazing units.

To ensure a safe design, tick the relevant checkboxes on the right. For example, spandrel glazing can typically become very hot, which needs to be noted.

### 3

## Loads

The next section focuses on loads. Complete this section by inputting all loads that could be applied to the glazing. If the glazing is not vertical, consider introducing snow loads. If there is a risk of falling, you should define barrier loads.

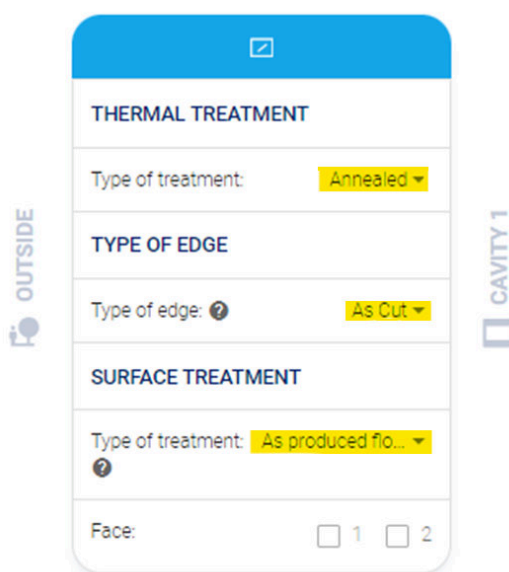
- **Line load** refers to the force applied uniformly along a specific linear length.
- **Point load** refers to the force applied to a small area measuring no more than 100 x 100 mm.
- **Bottom Distributed load** refers to the force applied over the entire surface, from the bottom to the defined height.
- **Extra surface load and Maintenance load** are parameters that can be defined when the glazing is to be used in a roof.

## Product Information and Cavity Pressure Variation

In this section, you can select the products you want to evaluate. You can select your product from the Glass Configurator or select a product from an existing project. Choose the product to be evaluated from the dropdown menu.



You can then specify **Thermal Treatment**, **Type of Edge** and **Surface Treatment** for each glass product. For glass supported on two or three sides, the edge finishing of the panes affects the strength.



The cavity pressure within an insulated glass unit is influenced by:

- The variation in atmospheric pressure between the production plant and the site
- The difference in altitude between the production plant and the site
- The difference in temperature between the production plant and the site

If you do not know these values, use the default values.

CAVITY PRESSURE VARIATION (CPV)

Cancel CPV Effect

### Pressure variation

Help
Arm pressure during IGU production in winter
101 kPa

Help
Arm pressure during IGU production in summer
101 kPa

Help
Arm pressure during IGU lifetime in winter
105 kPa

Help
Arm pressure during IGU lifetime in summer
99 kPa

### Altitude variation

Help
Minimum altitude of IGU production factory
0 m

Help
Maximum altitude of IGU production factory
0 m

Help
Maximum altitude of IGU on site
600 m

Help
Minimum altitude of IGU on site
-300 m

### Temperature variation

Help
Temperature during IGU production in winter
20 °C

Help
Temperature during IGU production in summer
20 °C

Help
Summer DGU Temperature
40 °C

Help
Winter DGU Temperature
-5 °C

Reset parameters

5

## Results and Report

You can check the validity of your results in terms of maximum admissible deflection and stress. If you do not pass these two criteria, as defined by the selected standard, then check the most critical load case. Lastly, you can download the Glass Thickness Calculator report, which will contain all the detailed results and input conditions.

Results

45% SLS

45% ULS

Download results (PDF)

Utility ratio SLS : 45%  
DEFLECTION CHECK

The result should be lower or equal to 100%. The most critical load case is shown here under:  
1.00 x Dead Load  
+ 1.00 x Winter deltaH  
+ 1.00 x Winter deltaP  
+ 1.00 x Winter deltaT  
+ 0.60 x Wind pressure  
The deflection of the glazing depends on its thickness, size, support system and the load type.

Utility ratio ULS : 45%  
STRESS CHECK

The result should be lower or equal to 100%. The most critical load case is shown here under:  
1.10 x Dead Load  
+ 1.10 x Winter deltaH  
+ 1.10 x Winter deltaP  
+ 1.10 x Winter deltaT  
+ 0.66 x Wind pressure  
The design strength of the glazing depends on its thickness, heat treatment, edge treatment, load type etc.

6

## Limitations

The calculation for the glass panel is performed under the assumption of linear material behaviour and linear geometry. Stresses and deflections in the glass are obtained using theoretical solutions when available, and by the finite difference method in other cases. The gas in insulating glass units is considered to be isothermal, and the load sharing between insulating glass unit panels is calculated according to the selected standard.

7

## Note

Incomplete or erroneous information will impact the content of the Glass Thickness Calculator report, for which AGC cannot be held responsible. Users are therefore explicitly requested to ensure they understand the input they provide and to have the results of the calculation verified and approved, if necessary, by the engineer or engineering company responsible for the project for which the structural calculation is requested.

glass.configurator@agc.com

- 6 -