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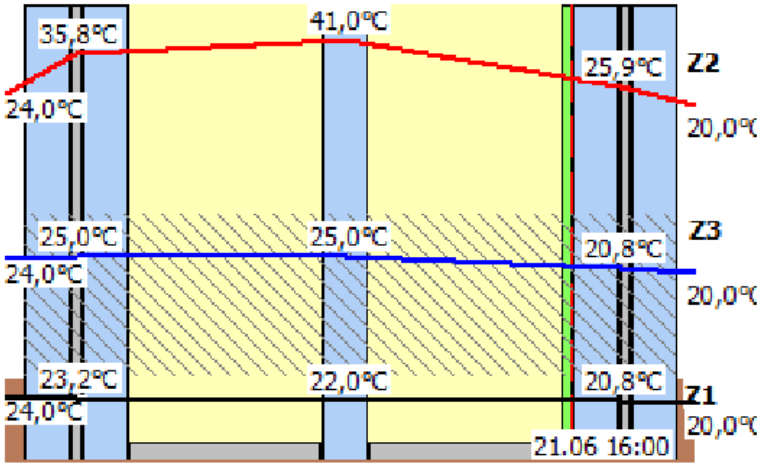
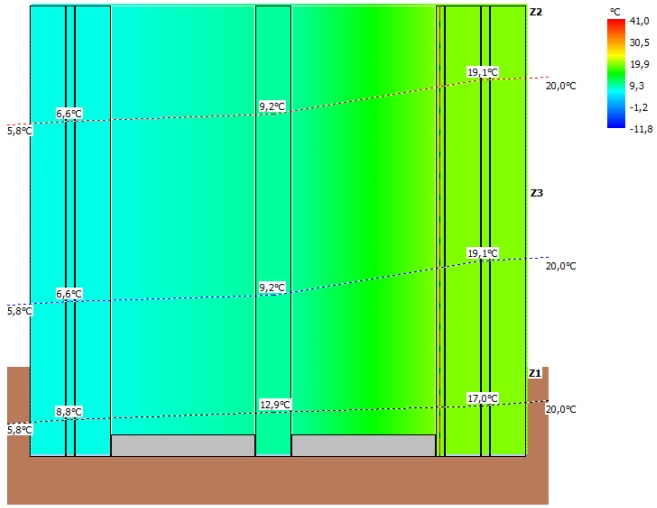
Sommer Informatik

WinTHS

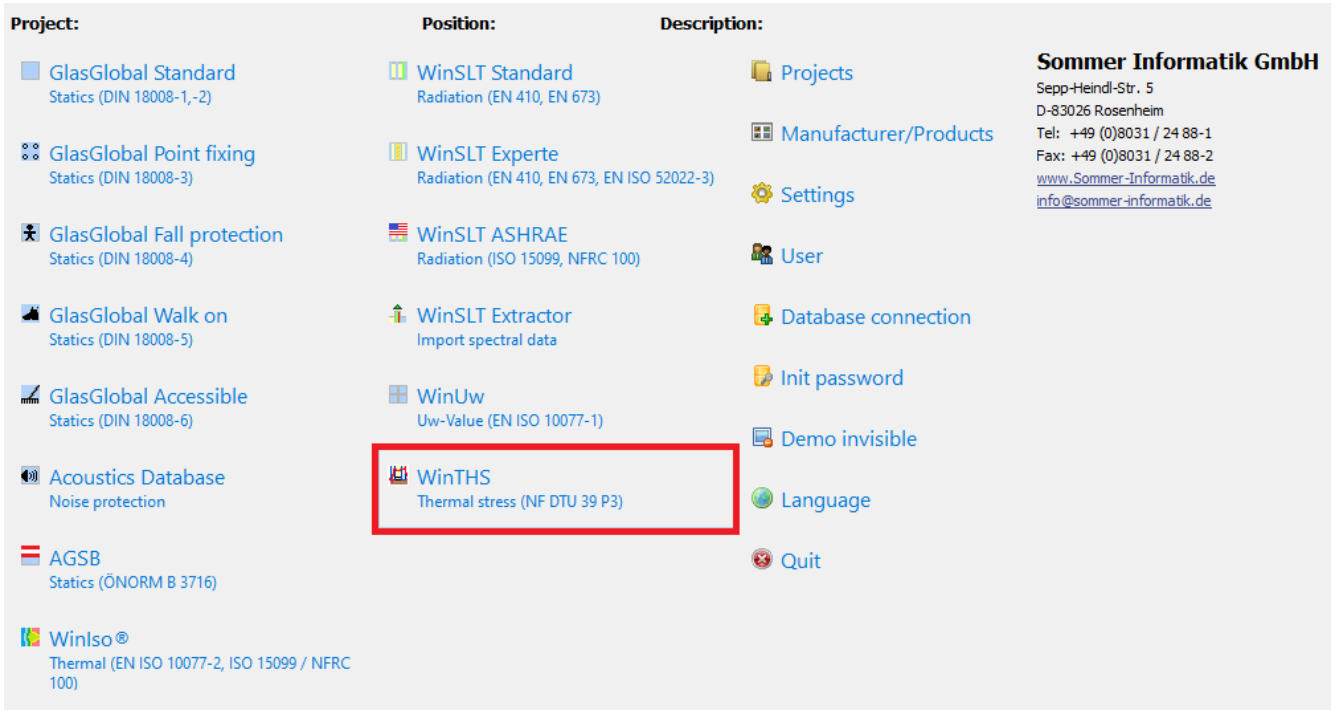
The software solution for the calculation of thermal stresses in glass caused by solar radiation





Start project

- To start a new project, the WinTHS program must be started via the start mask



Program structure

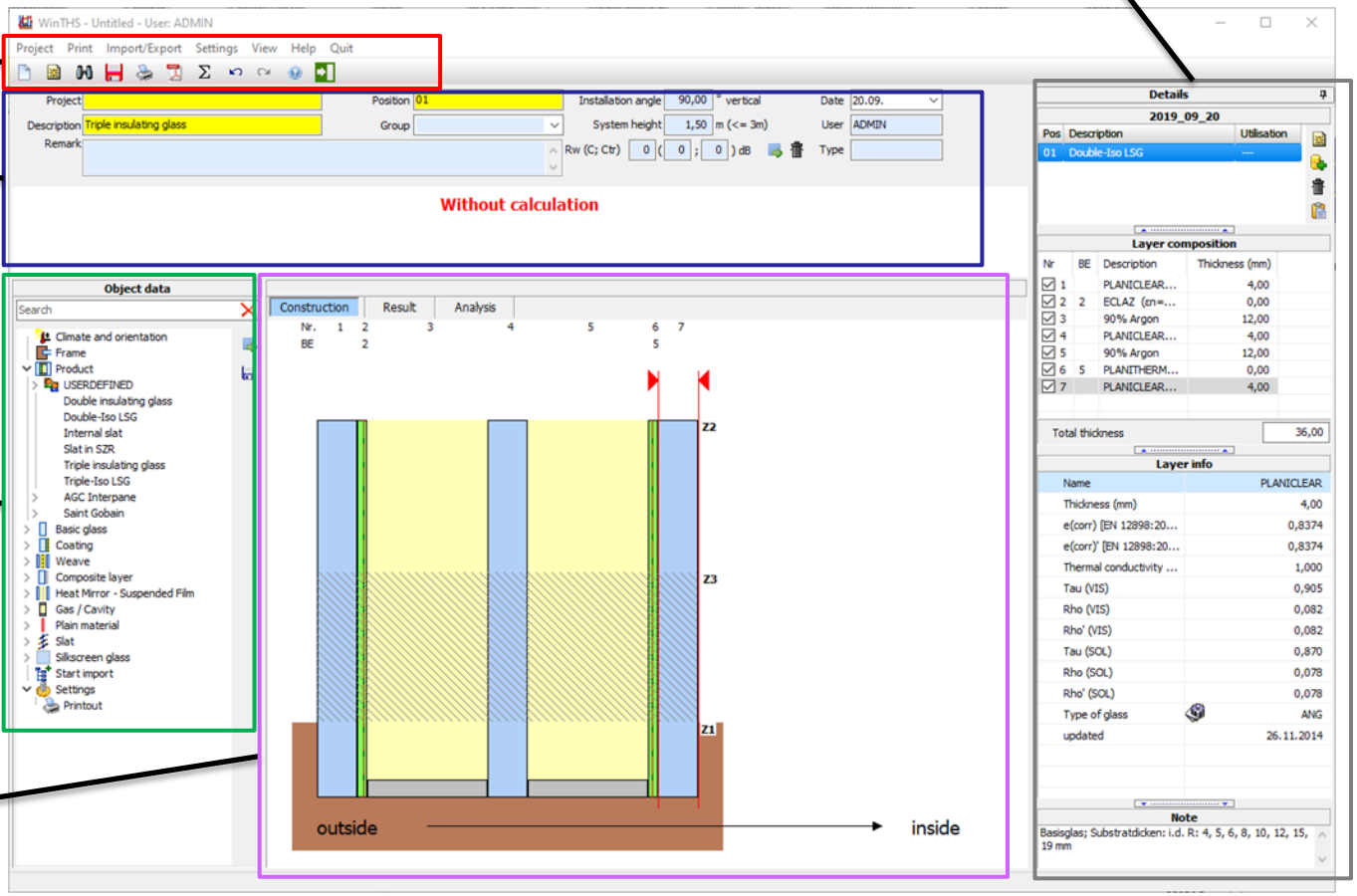
Header

Project details

Object data

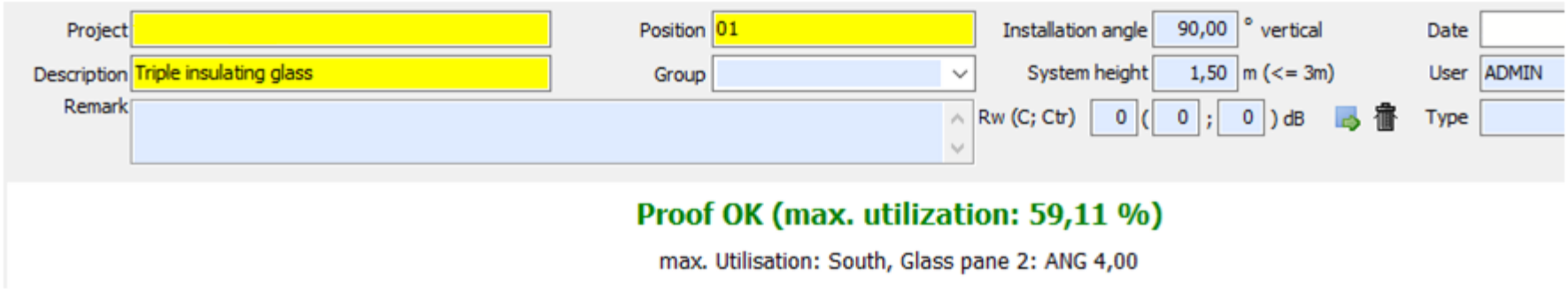
Construction

Details



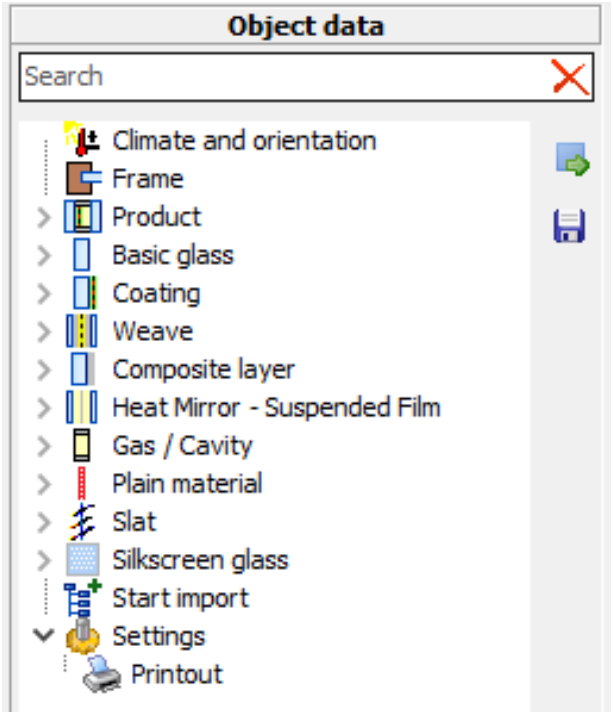
Enter project details

- Program information and name can be changed in the project header line
- After the calculation, the result is also displayed here.



Object data

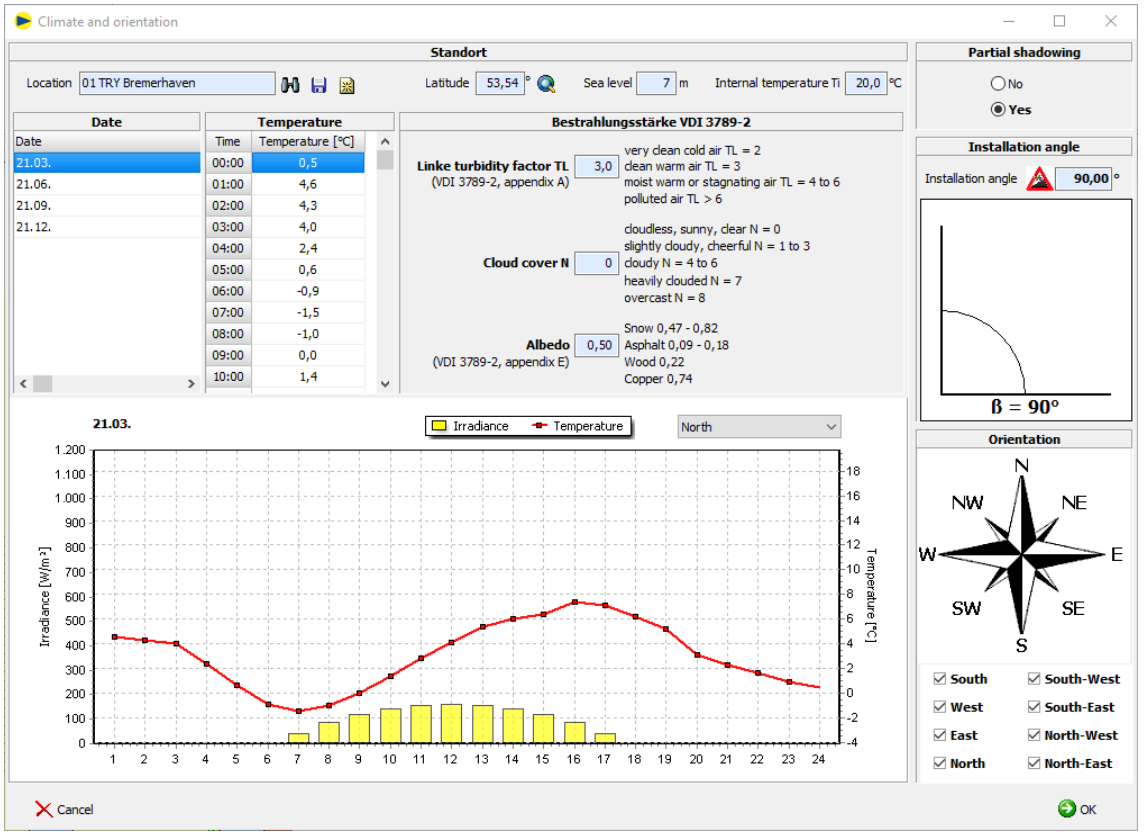
- You can change the materials and settings required for the structure in the *object data* area
- It is advisable to work through the points one by one
- If no suitable objects are available, you can create a user-defined material or make settings



Climate and orientation

- **Location**
  Determination of the location from which the outside temperatures and irradiance levels for the specified days are determined during the calculation

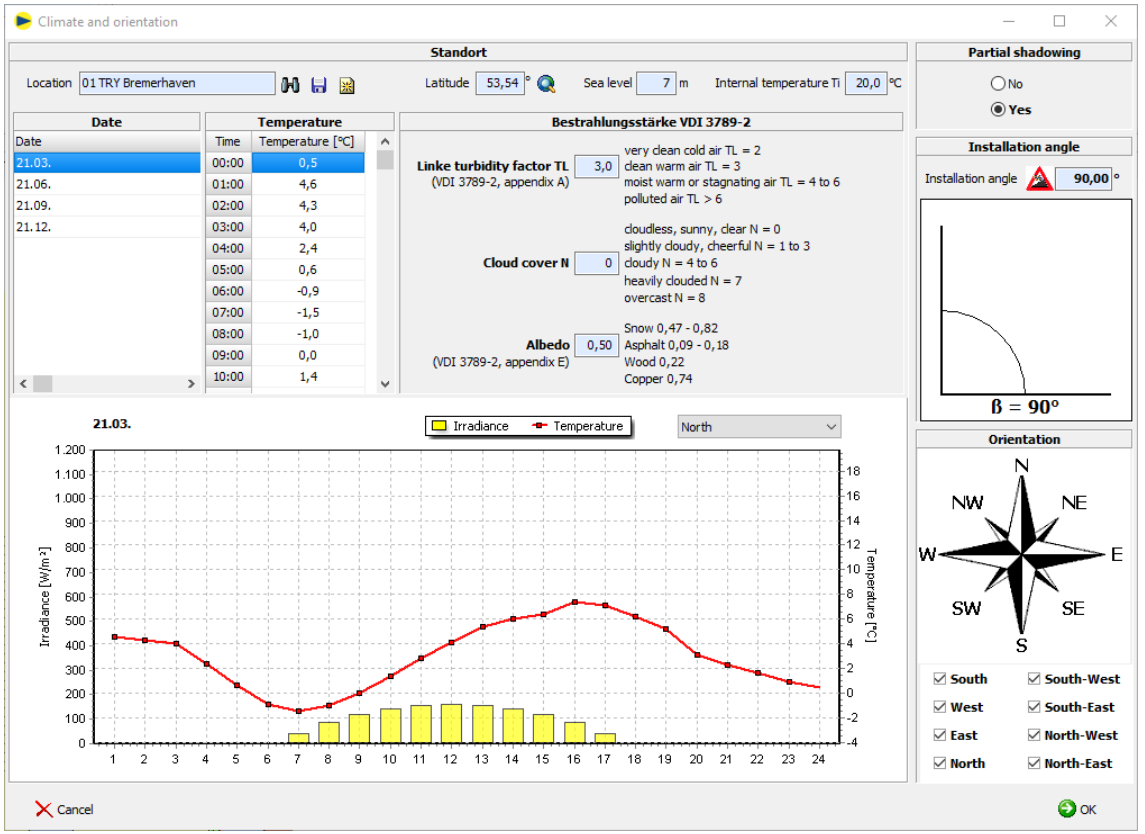
- **Partial shading**
  The presence of a sun visor, canopy, loggia or wall may cause a temporary or permanent shadow to be cast on the glazing. The indication of the partial shading is required for the calculation of the thermal stress σ_{th}.



Climate and orientation

- **Installation angle**
  Indication of the installation angle in relation to the horizontal

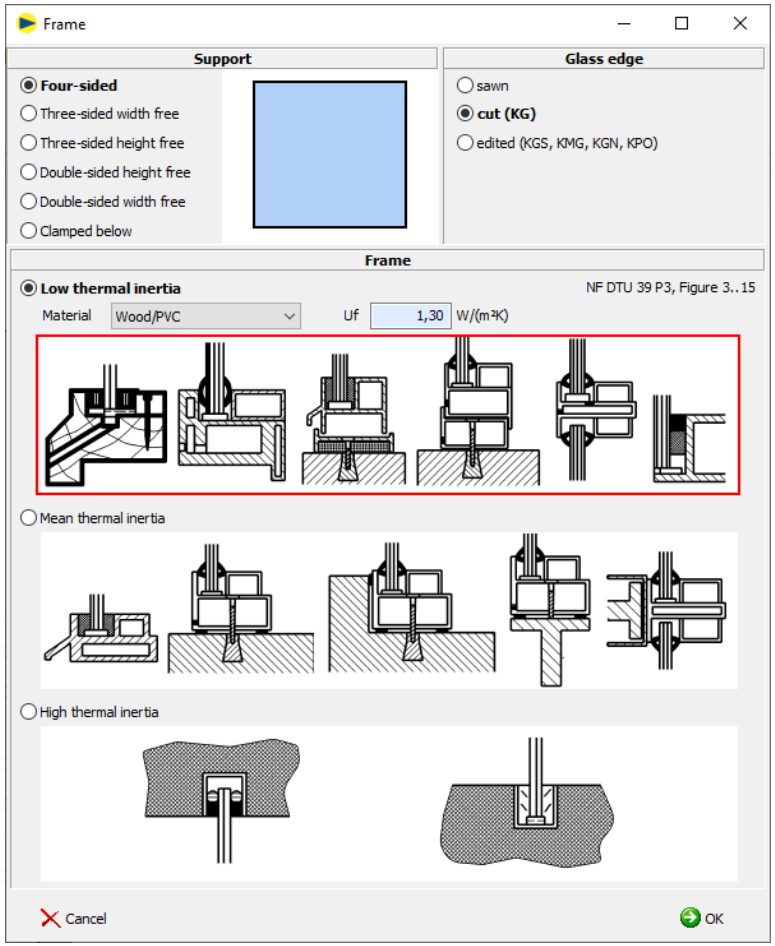
- **Orientation**
  Determines for which orientations the calculation is to be carried out



Frame

- **Storage**
  The type of bearing arrangement is required for determining the coefficient k_a according to NF DTU 39 P3, Table 9, which is included in the calculation of the permissible stress σ_{adm}.

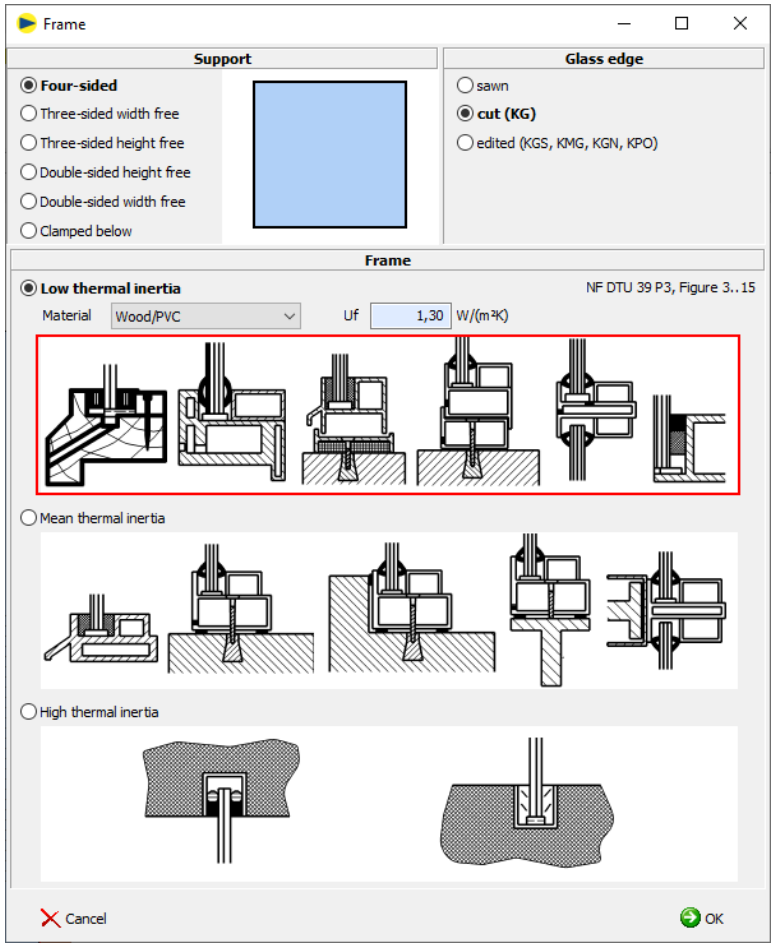
- **Glass edge**
  Enter the type of glass edge here. The coefficient k_v according to NF DTU 39 P3, Table 11, which is also included in the calculation of the permissible stress σ_{adm}, is determined on the basis of this information.



Frame

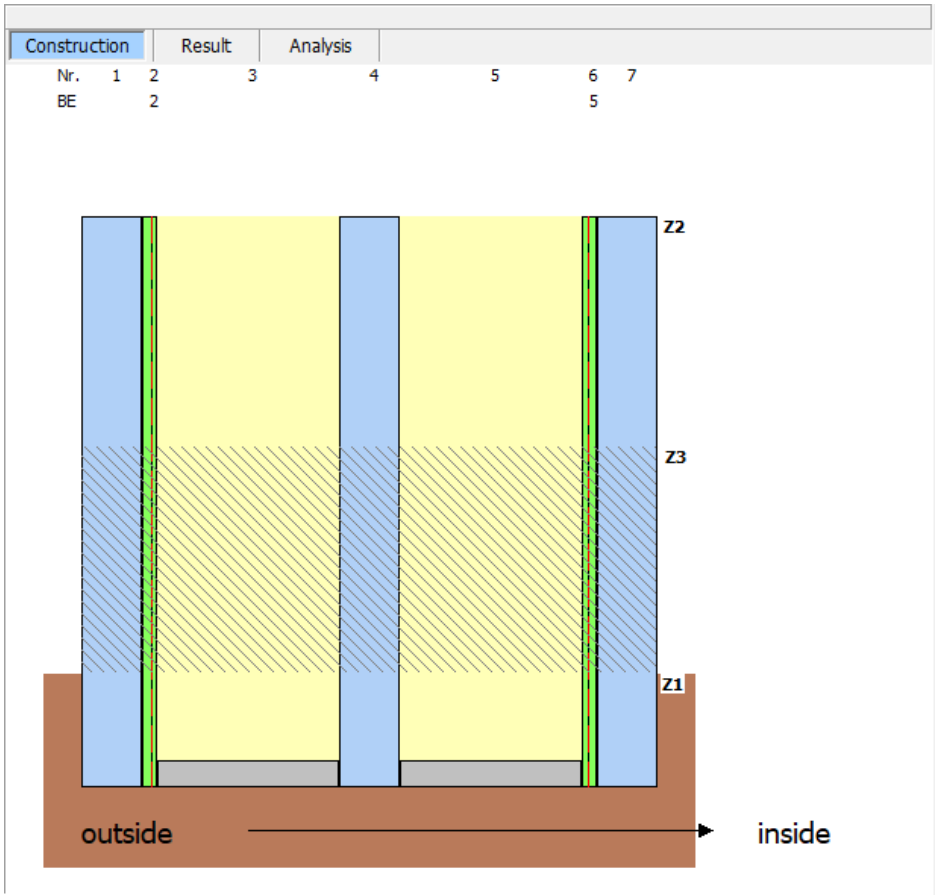
- **Frame type**
  Usually, the frame with a low thermal inertia should be used here, specifying the material and the frame U-value U_f.

  On the basis of the data, the temperatures of the glass in the frame (zone 1) are calculated later.



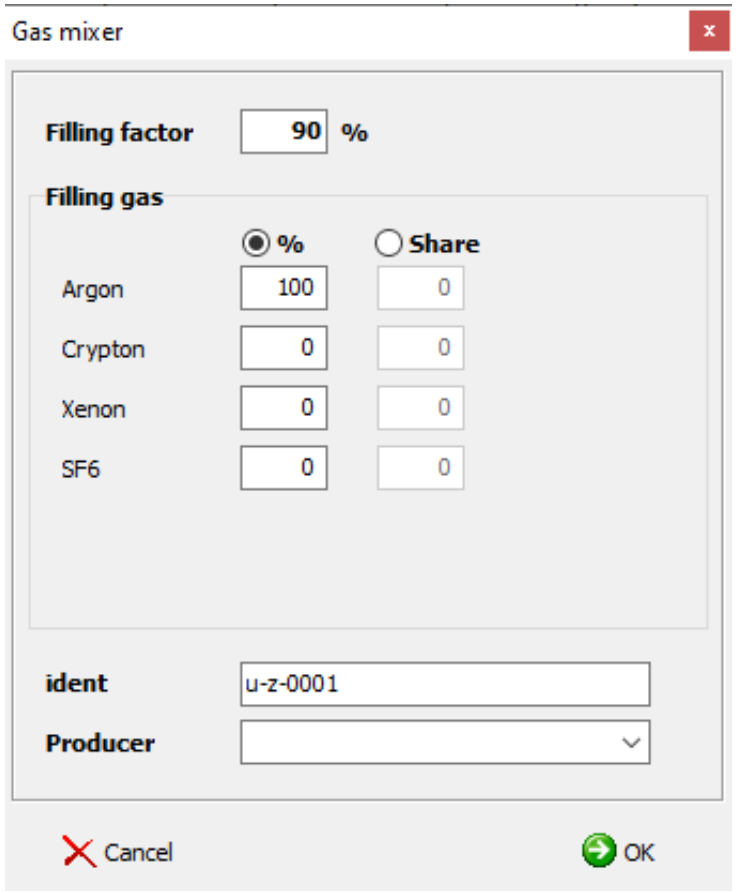
Construction

- The products can be added to the project according to their structure
- The pane structure is displayed graphically



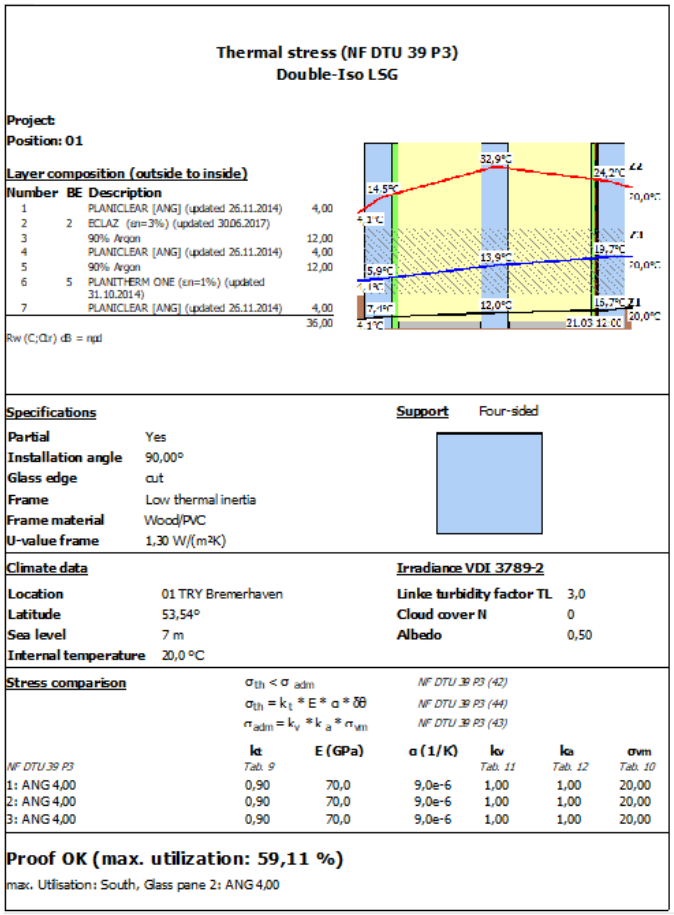
Pane gap

- The gas mixer allows the creation of an individual gas for the intermediate space
- The degree of filling can be changed as desired
- The created gas can then be found in the master data and can also be used for other projects



Results

- A clear printout of results shows all values at a glance
- The graphic display of the glass structure with the layer temperatures simplifies the evaluation of the data
- The result of the verification and the max. utilization are clearly and simply displayed



Thermal stress (NF DTU 39 P3)
Double-Iso LSG

Project:
Position: 01

Layer composition (outside to inside)

Number	BE	Description	
1		PLANICLEAR [ANG] (updated 26.11.2014)	4,00
2	2	ECLAZ (εn=3%) (updated 30.06.2017)	
3		90% Argon	12,00
4		PLANICLEAR [ANG] (updated 26.11.2014)	4,00
5		90% Argon	12,00
6	5	PLANITHERM ONE (εn=1%) (updated 31.10.2014)	
7		PLANICLEAR [ANG] (updated 26.11.2014)	4,00
			36,00

Rw (C;Ctr) dB = npd

Specifications

Partial	Yes
Installation angle	90,00°
Glass edge	cut
Frame	Low thermal inertia
Frame material	Wood/PVC
U-value frame	1,30 W/(m²K)

Support Four-sided

Climate data

Location	01 TRY Bremerhaven
Latitude	53,54°
Sea level	7 m
Internal temperature	20,0 °C

Irradiance VDI 3789-2

Linke turbidity factor TL	3,0
Cloud cover N	0
Albedo	0,50

Stress comparison

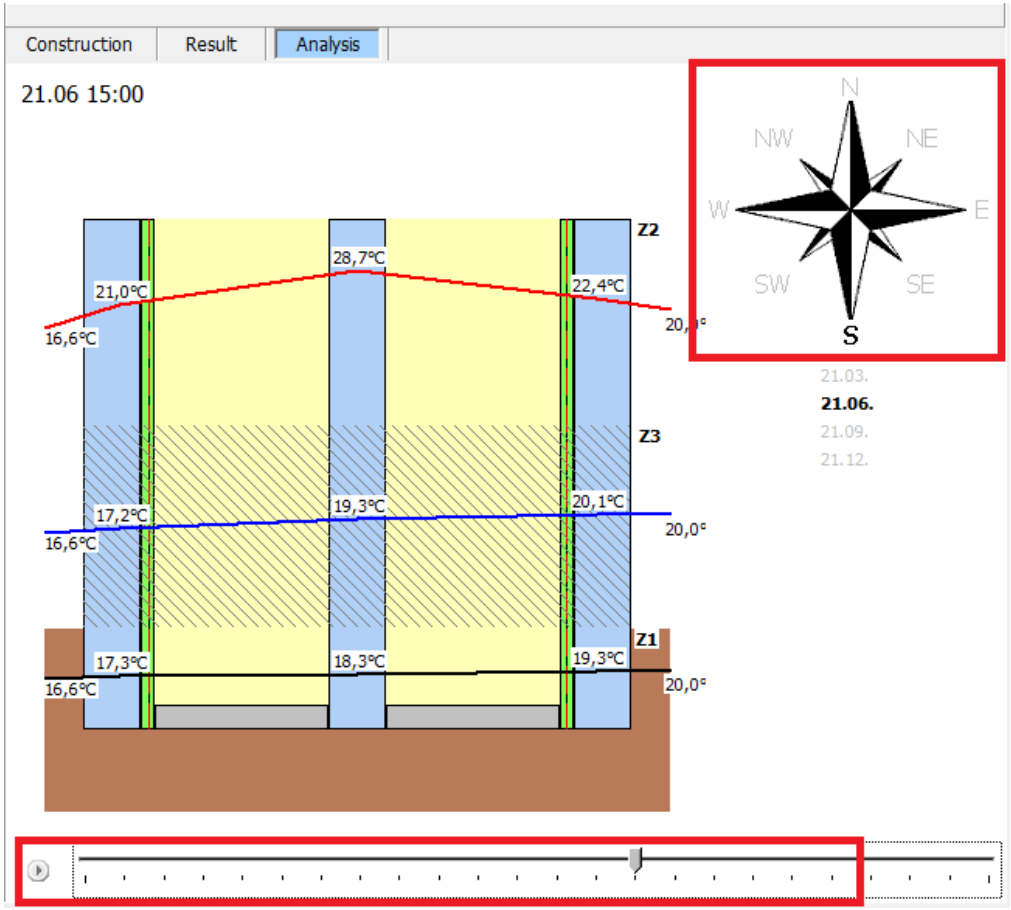
$\sigma_{th} < \sigma_{adm}$ *NF DTU 39 P3 (42)*
$\sigma_{th} = k_t * E * \alpha * \delta\theta$ *NF DTU 39 P3 (44)*
$\sigma_{adm} = k_v * k_a * \sigma_{vm}$ *NF DTU 39 P3 (43)*

NF DTU 39 P3	k_t *Tab. 9*	E (GPa)	α (1/K)	k_v *Tab. 11*	k_a *Tab. 12*	σ_{vm} *Tab. 10*
1: ANG 4,00	0,90	70,0	9,0e-6	1,00	1,00	20,00
2: ANG 4,00	0,90	70,0	9,0e-6	1,00	1,00	20,00
3: ANG 4,00	0,90	70,0	9,0e-6	1,00	1,00	20,00

Proof OK (max. utilization: 59,11 %)
max. Utilisation: South, Glass pane 2: ANG 4,00

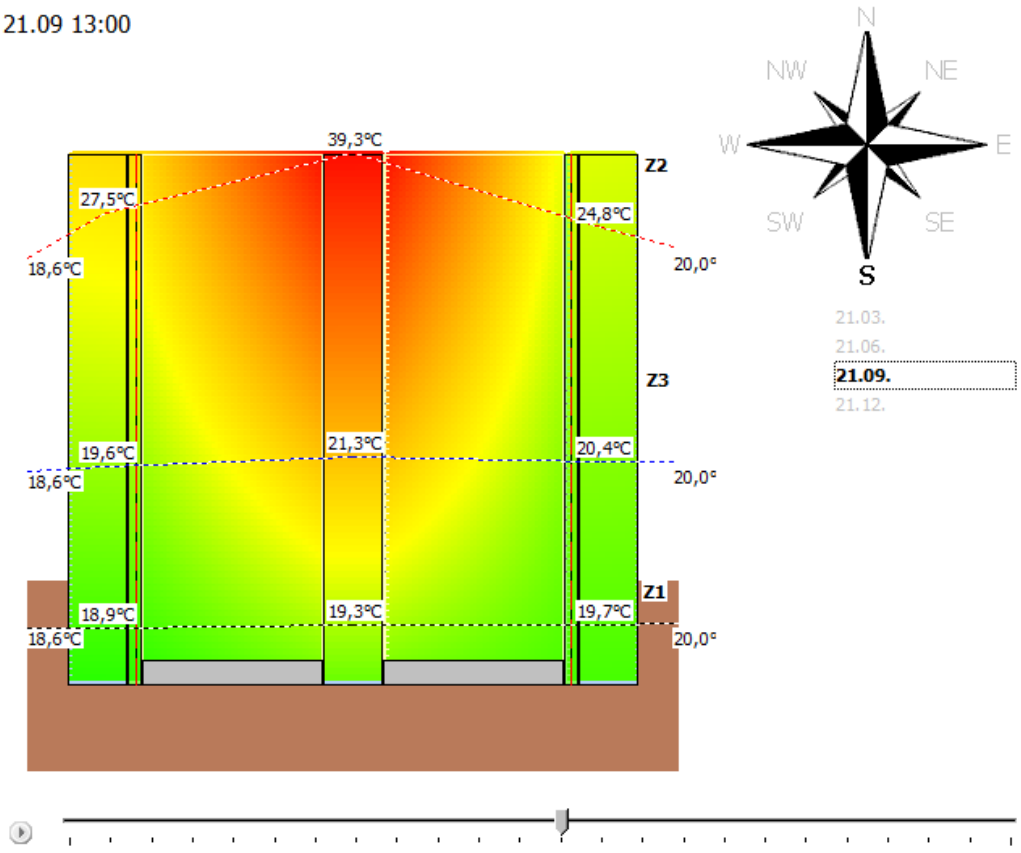
Analysis

- The representation of the temperature distribution is possible in the individual zones for each orientation and each period.



Analysis

- Color mismatch display is also possible



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Building Physics Highlights of Sommer Informatik GmbH:

- **WINISO® – Calculation of two-dimensional heat flows**
- **WINSLT® – Professional software for light transmission**
- **GLASGLOBAL® – Glass dimensioning according to DIN 18008**