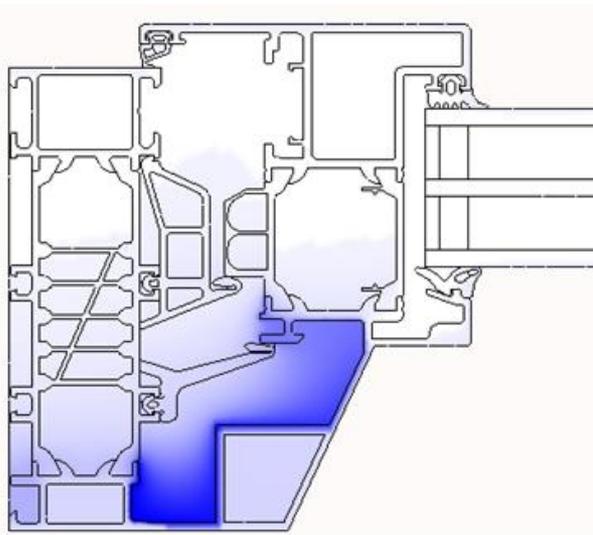
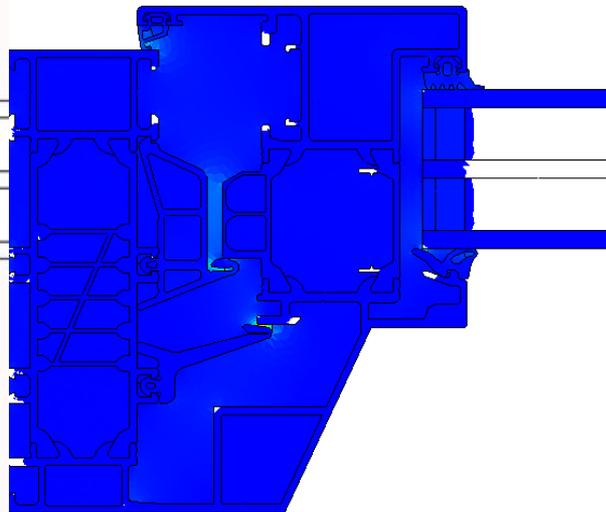


Addon WinIso® Humidity

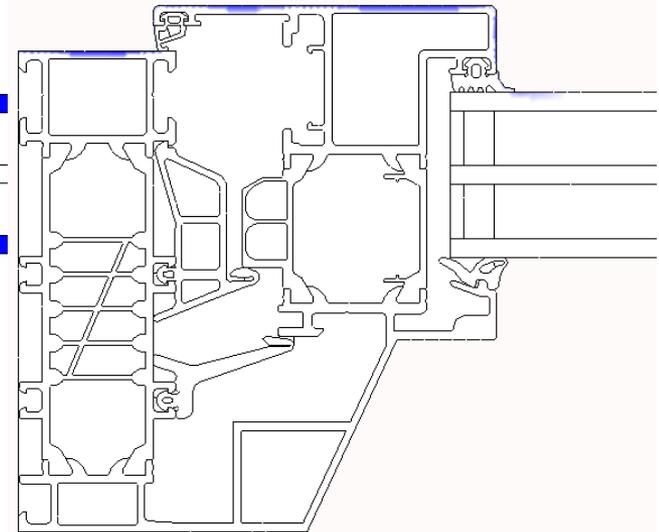
Relative humidity



Vapor diffusion

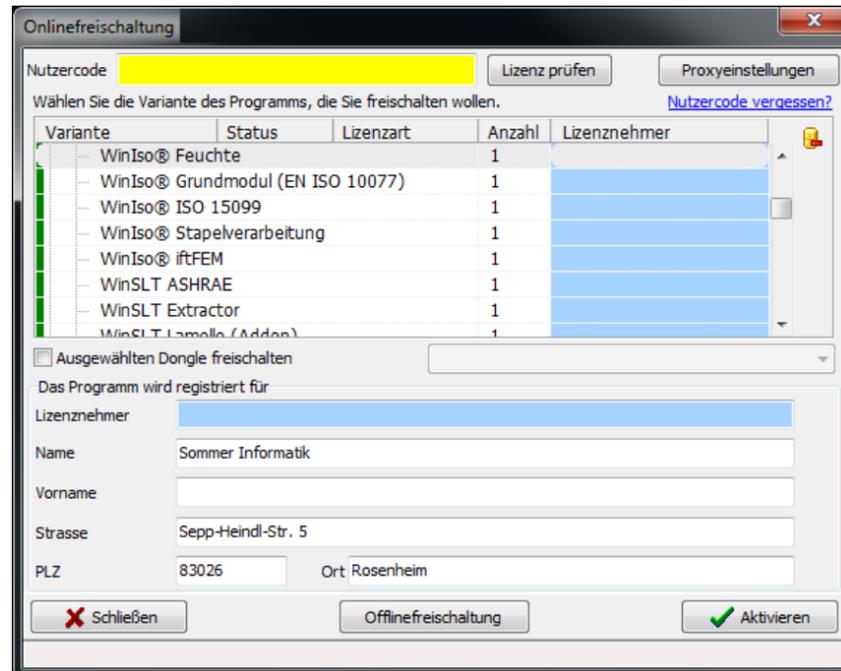


Condensation failure



Addon WinIso® Humidity

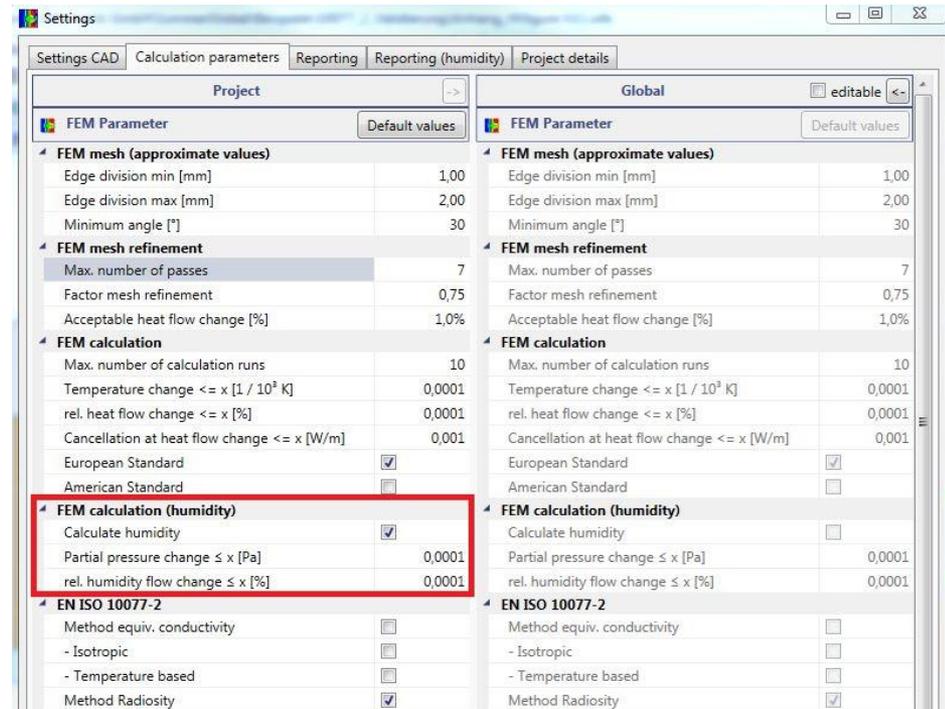
The function of calculating the humidity must be added to your SommerGlobal license:



Addon WinIso® Humidity

The basis for the humidity calculation is the heat flow calculation of the complete model.

Before starting the calculation model, the settings for change of the partial pressure and moisture flow can be refined.





Addon WinIso® Humidity

When the model has been calculated, there are three additional tabs for the moisture evaluation in the “reporting mode”.





Addon WinIso® Humidity

Relative humidity fields

The display provides information about the quality of the profile / component. The darker the points in the profile, the greater the relative humidity which means a risk of condensation water loss.

FEM values (humidity)	
Pi [Pa]	657
Psat [Pa]	669
Rel. Humidity [%]	98,22

The calculated value Psat is the saturation vapor pressure at this location in the component. It is temperature-dependent and indicates how much water in Pa can absorb the component at this respective point.

Pi is the water vapor partial pressure at the respective location. The partial pressure is set by the boundary conditions and the heat transfer in components and cavity.

If the partial pressure exceeds the saturation pressure, the component is "supersaturated" at this point and in succession will lose condensation.

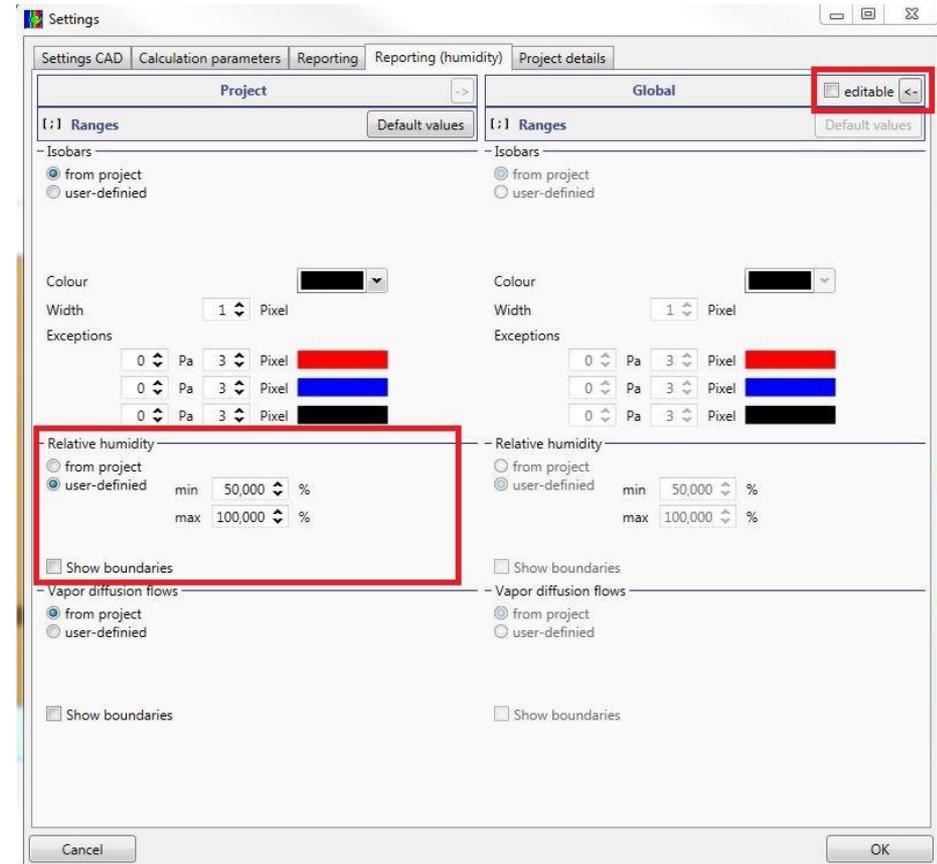
Addon WinIso® Humidity

Settings relative humidity:

Under options and settings you can choose the tab „Reporting (humidity)“

The displayed range of humidity can be entered manually here.

By setting/resetting the "editable" values, the values from the current project are adopted





Addon WinIso® Humidity

Vapor diffusion flow fields:

It shows how much water in $\text{g} / \text{m} * \text{d}$ flows through a component. The steam flow is analogous to the temperature profile through a component, that means the water vapor stream flows from high to low along the partial pressure gradient. Decisive for the diffusion current through a component is the resistance coefficient μ . The larger the number, the more impermeable the building material is.

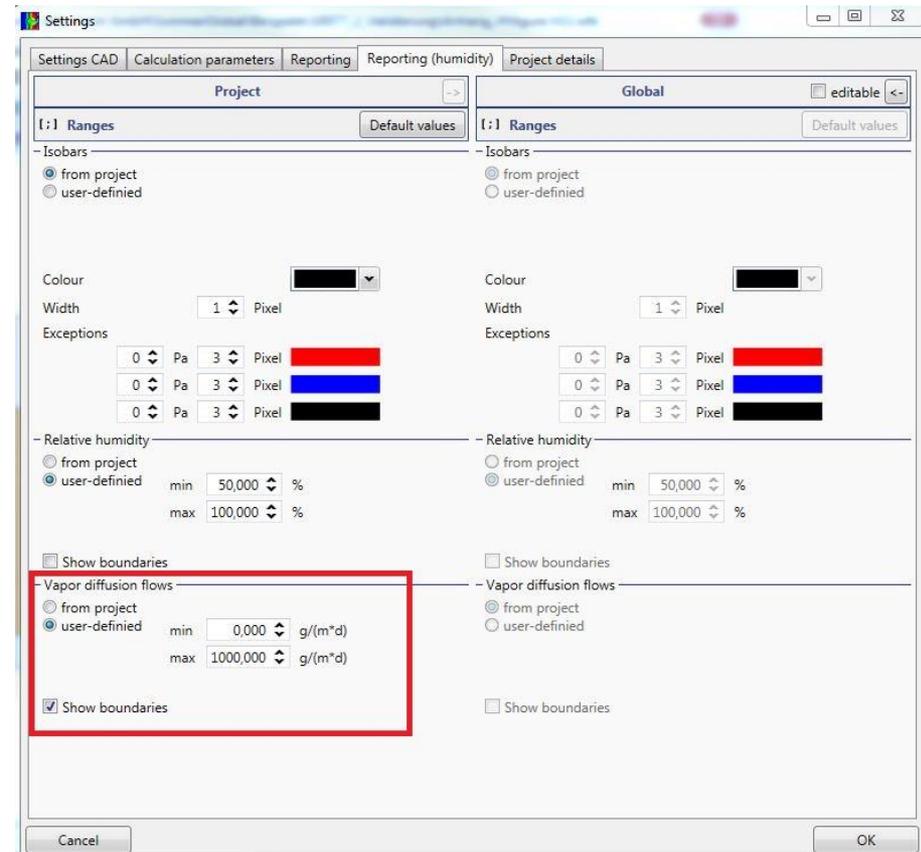
Addon WinIso® Humidity

Settings vapor diffusion:

Under options and settings you can choose the tab „Reporting (humidity)“

The displayed range of the vapor diffusion streams can be selected here.

By setting/resetting the "editable" values, the values from the current project are adopted





Addon WinIso® Humidity

Condensation:

If the partial pressure P_i exceeds the saturation vapor pressure P_{sat} , condensation occurs in the profile.

Common causes are low temperatures and low diffusion resistance μ of the individual components.

Parts of condensation water are blue marked.

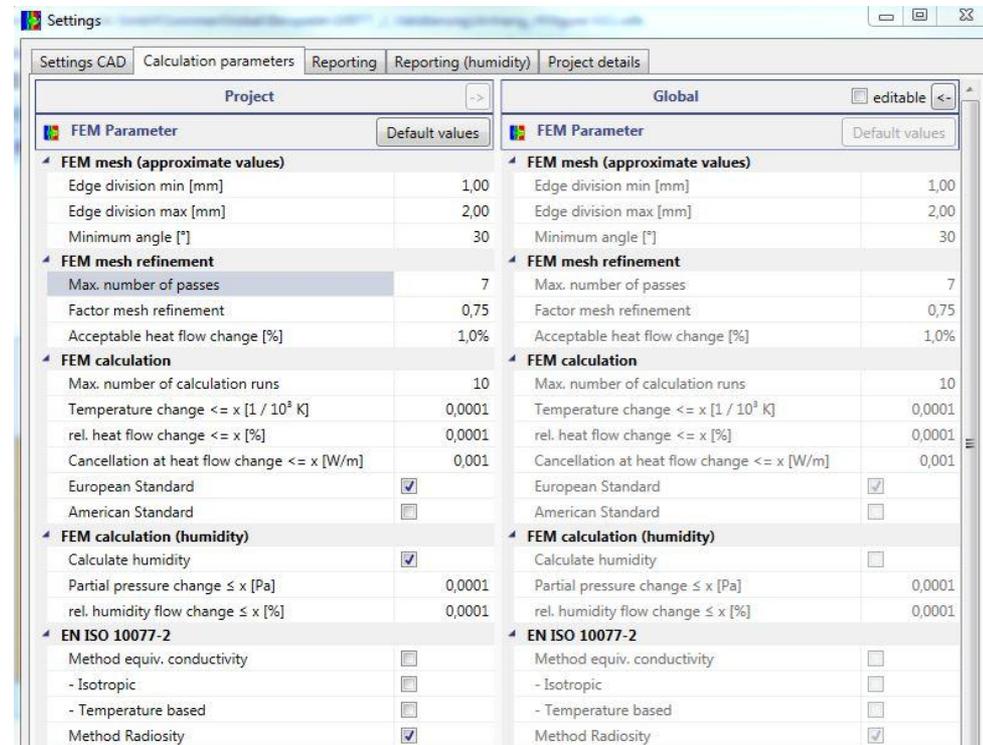
Addon WinIso® Humidity

Calculation parameters:

The figure shows in the left column the default settings for the FEM parameters with humidity calculation.

The right column shows the default settings for a calculation without humidity.

If the humidity calculation has been selected, the calculation parameters for the FEM network creation are automatically refined.



Addon WinIso® Humidity

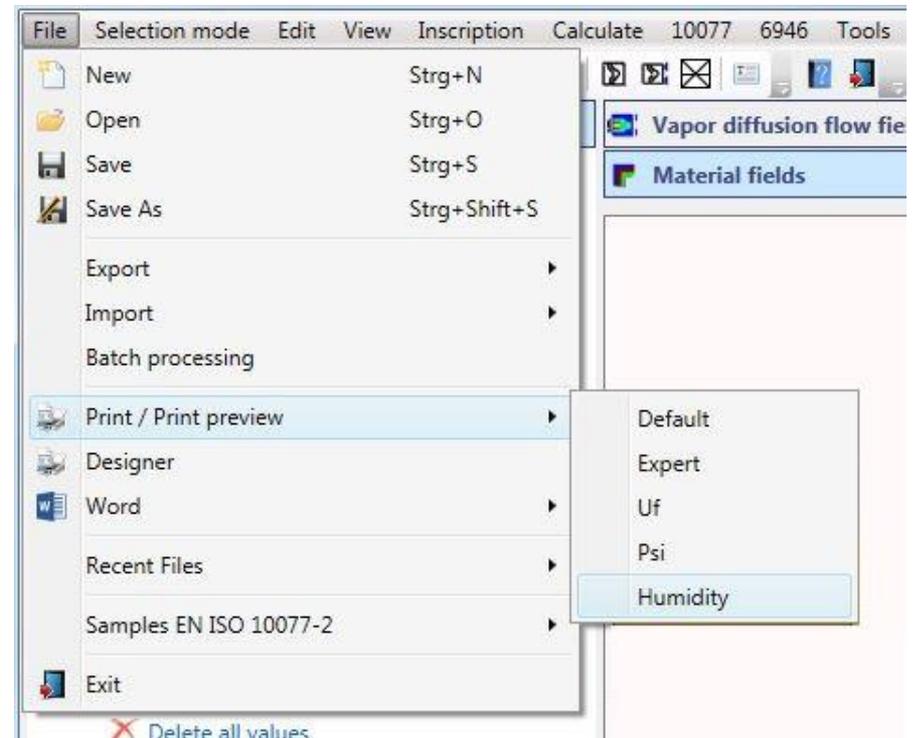
Printout:

In „Print/Print Preview“ you can find the printout of the humidity calculation.

In the designer, the expression can be customized.

The printout can also be exported to a word file.

Individual settings can be made in the Designer. The settings made are adopted for the word export.





Addon WinIso® Humidity

The printout shows the vapor diffusion current in (g/d*m) set by the boundary conditions..

Boundaries

Name	T [°C]	φ [%]	Gtot [g/(d*m)]
<input type="checkbox"/> boundary condition outside 0,04, 0°C, 80%	0,000	80,00	0,005
<input type="checkbox"/> boundary condition inside 0,13, 20°C, 50%	20,000	50,00	0,012
<input checked="" type="checkbox"/> boundary condition inside 20°C 0.20	20,000	50,00	0,009

The installed materials and gases are listed with their area and water vapor resistance coefficient μ .

Solids

Name	A [mm²]	μ [-]
<input checked="" type="checkbox"/> alu (Si-Leg.) 160	1236,45	100000
<input checked="" type="checkbox"/> EPDM	452,35	6000
<input checked="" type="checkbox"/> float 1.0	2520,00	100000
<input checked="" type="checkbox"/> PVC hard	792,06	50000
<input checked="" type="checkbox"/> Saint-Gobain Glass Solutions SwisspacerV 12 mm	156,00	1
<input checked="" type="checkbox"/> silicone	72,00	5000

Cavities

Name	A [mm²]	μ [-]
<input checked="" type="checkbox"/> Gas EN 673 90% argon 10% air (insulation glass)	4812,00	1
<input checked="" type="checkbox"/> Air EN ISO 10077-2	7416,89	1



More information at:

www.winiso.de

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