



Calculations

The thermal insulation system is effective and durable not only depending on the quality of the materials used but also the accurate and proper application. To a large extent it is a matter of selecting individual elements of the system properly.

The thermal insulation system's efficiency is a function of many variables. It depends, among others, on preserving the building envelope's heat and moisture balance and on the type or economically reasonable insulation thickness. Therefore, while selecting the best thermal insulation system, it is recommended that computer programs were used in order to carry out relevant calculations and simulations of envelopes properties (based on the principles of building physics).



Calculations and software

To meet the needs of users (e.g. designers and investors), Henkel offers two programs for independent heat and moisture calculations of envelopes in accordance with the laws of building physics. This is intuitive, user-friendly software which calculates one-dimensionally stable heat transport, such as Konstruktor (Constructor) program version 3.7 and Envelope heat and moisture calculations program (Ceresit C-W).

Both programs are able to perform the following calculations:

- calculations of internal and external surface temperature of the walls,
- calculations of thermal and diffusion resistance of particular envelope layers,
- calculations of thermal resistance of the adjacent soil,
- calculations of the heat transition coefficient for the envelope (taking into account the thermal bridges and joints – only Ceresit C-W program),

- determination of condensation zones on the envelope,
- simulation of moisture transport during a 12 months' cycle, based on average monthly temperatures,
- determination of condensation zones in particular months and delimitation of the mass of water evaporated from the envelope.

Programs can produce results in a form of tables and diagrams.



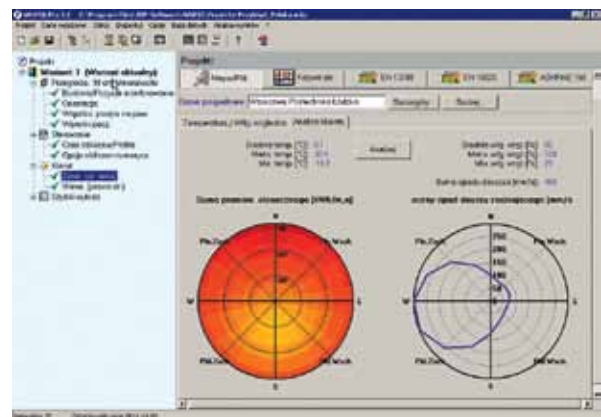
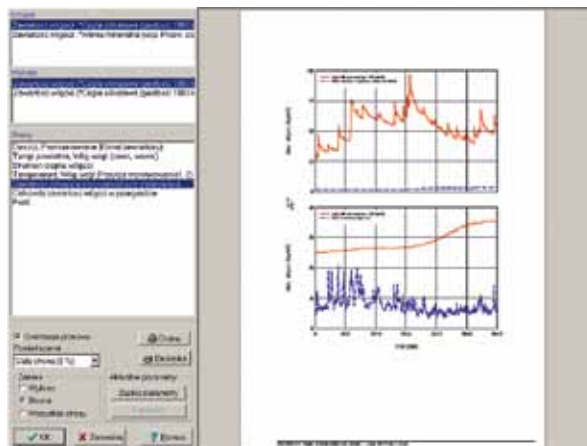
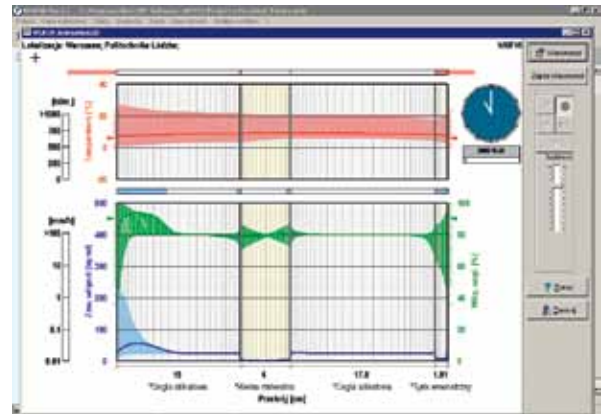
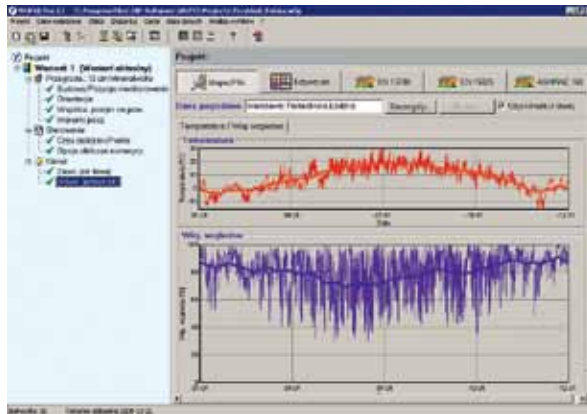
Based on these programs one can select the thickness of the insulating material in relation to standards and law requirements as well as their own expectations. A simulation of the annual moisture balance determines the envelope's moisture balance and indicates whether the mould and fungi has developed (in the existing wall) or check if there is such a risk (regards the newly designed wall).

In specific cases Henkel uses the advanced WUFI 5 program to provide comprehensive technical support. The program enables us making a dynamic simulation

of the envelope's hydro thermal properties, taking into account the changing parameters of the individual materials.

It is particularly useful when applying thermal insulation on historic buildings or sites of specific conditions (ie, cold stores, production halls with high interior temperatures).

This analysis helps determining whether the envelope is able to absorb and evaporate the moisture coming from the environment, water vapour condensation and technical moisture.



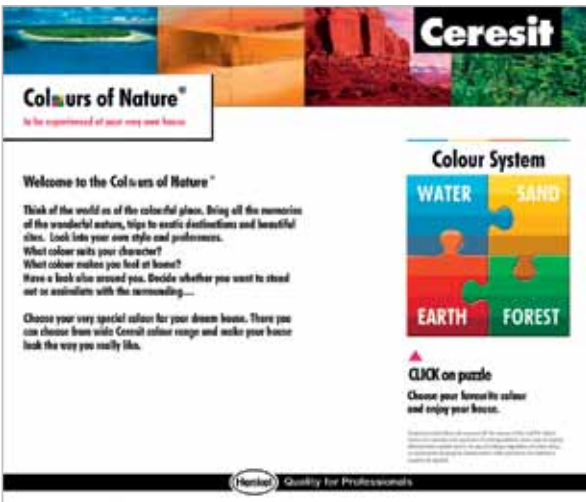
Facade design software

In addition to the software tools allowing heat and moisture calculations, Henkel offers two programs supporting the design of the facade colour. One of them is used to simulate the colour of the existing or newly designed buildings. After uploading the building's photos and indicating areas where thermal insulation is intended, it is possible to simulate different textures and colour variations of the facade.

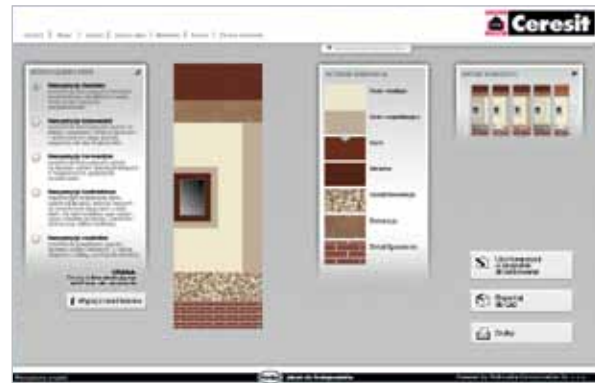
The second program is Ceresit VISAGE – for easily designing the facade's appearance using decorative tools offered by the Ceretherm VISAGE system combined with the Colours of Nature® palette. One can simulate the appearance of the facade with a wood, stone or metallic effects with ease.

Henkel also provides Colours of Nature® and VISAGE colours and textures libraries for AutoCAD®, ArchiCAD® and Autodesk® 3ds Max® programs.

Using these tools is a great help in making a choice, giving the possibility to see an initial preview of the facade design and it helps selecting individual components.



Use new application 'Colour your house' enables the visualization of your elevation.



The program allows you to create any colouring of the building on the basis of your own design.



The program also allows a selection of the prepared compositions from a base of examples available in the application.



The program includes a complete line of Colours of Nature® and VISAGE colour libraries.