



Foto: Eurac Research/Ivo Corrà

LABORATORY

G-value Lab

Laboratory for measuring the solar factor

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The G-value Lab measures the solar factor, which is often referred to as the g-value or solar heat gain coefficient (SHGC). SHGC is the amount of solar energy that is transmitted through a glazed component. In our lab, we can measure the solar factor of transparent and semi-transparent envelope elements, including integrated shading components. The precise measurement of this value improves the performance predictions of simple glazing, as well as of more complex and innovative envelope solutions, and thus facilitates new building projects and restorations.

The G-value Lab can record the solar factor under different conditions for 1 x 1 m samples with thicknesses of up to 10 cm. Our skilled Eurac Research team is available to researchers, designers, manufacturers and installers for the performance characterisation of existing products or of the development of new solutions.

Measurement of the solar factor of doors and windows and of other transparent and semi-transparent component

The laboratory consists of a sun simulator; a climatic chamber for monitoring test conditions (temperature and relative humidity); an insulated support on which the sample is placed; an absorber to remove energy that passes through the specimen; and a hydraulic circuit connected to the absorber that disposes of the removed energy. The configuration of the entire system (for example, a window frame with shading elements) and the boundary conditions (for example, temperature, air speed and angle of incidence of solar radiation) determine the solar factor. Tests for the solar factor of a sample can therefore be carried out in the climate chamber under different environmental conditions and at different angles of incidence.

Tests can be tailored to the customer's needs at various levels of complexity and support.

With the support of our researchers, standard solar factor measurement tests and customised tests can help improve prototypes and develop new solutions.

Types of Tests Performed

The experimental set up measures the solar factor according to three methodologies:

- measurement based on the thermal flow through the use of thermo-flowmeters
- measurement based on the inlet and outlet temperature of the absorber and on the water flow
- measurement based on the use of an additional electrical resistance

Company Service Expertise

Our skills have been honed by our participation in international research networks that support companies in the field of energy efficiency of buildings and natural lighting. The knowledge-base we have acquired, together with the flexibility of the laboratory, allows researchers to assist companies and designers in the performance characterisation and optimisation of individual components, as well as in the development of innovative technological and architectural solutions.

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