

LUMINOUS, SOLAR AND THERMAL CHARACTERIZATION OF TRANSPARENT AND OPAQUE MATERIALS FOR THE BUILDING ENVELOPE

Innovations and Benefits - The equipment of ENEA's laboratory allows to carry out measurements for the experimental characterization of elements of the building envelope, such as: innovative transparent systems, solar screening, materials with high solar reflectance (cool materials). The laboratory allows to characterize the product in its development phase, contributing to set up the optimal performances.

The laboratory equipment includes: customized UV-Vis-NIR spectrophotometer with large diameter integrating sphere, commercial UV-Vis-NIR spectrophotometer, emissometer, MIR-FIR spectrometer with golden integrating sphere, double and single sample hot plate, portable emissometer.

Numerical analyzes are also performed for the characterization of the systems and their integration into buildings. Advanced computing codes are used such as: TRNSYS, EnergyPlus, Design Builder, Window, Optics.

On-site monitoring activities are also carried out.

Use - Applications for transparent building envelope.

Applications and ongoing Activities - Research and consultancy activities with important industries of the sector (Italcementi, Covema, Mottura, F.lli Giovanardi). Participation in the European Cool Roof Council (a non-profit association that brings together major European industries and research institutions operating in the “cool materials” sector). Scientific collaborations with: Polytechnic of Milan, Polytechnic of Turin, University of Modena and Reggio Emilia, University of Roma Tre, IUAV of Venice, University of Perugia, Institute for Construction Technologies of CNR, National Institute of Metrological Research, Experimental Station of the Glass.

