

Project no. 337-094

Development of tools to promote energy-efficient use of sun screens

Project manager: BYG DTU – Svend Svendsen – Tel.: +45 4525 1854

This project aimed to develop two design work tools for documentation of the effects of sun screens on electricity consumption in buildings for outline projects and detailed design work respectively.

Results:

A method has been outlined for characterisation of the dynamic properties of sun screens, combined with the actual window to be used. The collective properties of the sun screen and the window for various settings and sun positions are calculated using WIS software. That is to say, these are significantly more realistic than a fixed screen factor such as those normally applied.

A new calculation program, LightCalc, has also been developed which can simulate daylight conditions in buildings and calculate the dynamic effect of sun screens. This program has been created as an integral part of the construction simulation software BuildingCalc, and it is ideal for working out the energy consumption in a simple way, together with indoor climate and daylight conditions in buildings with sun screens at the façade.

The construction simulation program BSim, which is already being used by most firms of consulting engineers, has been extended so as to be able to handle dynamic setting of the slats in sun screens.

The calculation tools developed are available to the planners. All users of BSim will automatically be offered the new version of the software. Buildingcalc/Light-Calc can be downloaded from <http://www.dtu.dk/centre/BFI/Fagomraader/energirigtigtbyggeri/integrateddesign.aspx>. This software requires installation of "Matlab Runtime Libraries", which can be ordered free of charge from DTU.BYG.

These tools are used for most engineering study programmes, and so they can be expected to be used extensively when the building façades of the future are designed. Together, these two tools make up an important part of the design work data for architects, engineers, etc. who could promote energy-efficient use of sun screens.