SOLAR CONTROL: TWO NEW SYSTEMS AND A GENERAL EVALUATION METHOD FOR FACADES WITH VENETIAN BLINDS OR OTHER SOLAR CONTROL SYSTEMS TO BE USED `STAND-ALONE' OR WITHIN BUILDING SIMULATION PROGRAMS

Tilmann E. Kuhn
Fraunhofer Institute for Solar Energy Systems ISE,
Heidenhofstr. 2, 79110 Freiburg, Germany
Phone: +49-761/4588-5 297 Fax: +49-761/4588-9 297, tilmann.kuhn@ise.fraunhofer.de

ABSTRACT

The presentation summarises the main results of the two papers [1] and [2] which have been published in `Energy and Buildings' 38, June 2006. The presentation will go beyond the content of the paper. The presentation will also show the application of similar models to venetian blinds which are integrated in glazings inter panes. The content of the talk is summarised in the following description:

The author has developed two new sun-shading systems together with two different companies and a general methodology for realistic performance evaluation of solar control properties of facades. The new method has proven to be of great practical value to planning teams of huge office buildings in Germany, Austria and Switzerland. The method is presented in detail in the above mentioned two papers. The methodology can be used either 'stand-alone' (without building simulation) for comparisons of different facade variants or within building simulation programs. Some parts of the proposed methodology could be used in standards (e.g. EN13363) or to improve the accuracy of building simulation programs which are currently on the market. Practical experience with the new methodology led to insights which are the basis for the design of two new products. The new stainless steel blind s_enn® selectively shields certain regions of the sky. This leads to a transparent appearance while direct insolation of the room and the associated glare is prevented in most cases. The special shape of the 'Genius slats' of a new venetian blind ensures good sun-shading properties which are relatively independent of the actual setting of the slats over broad ranges, which ensures robust performance despite so-called 'faulty operation'. The extension of the published methodology to solar control systems which are integrated in glazings allows detailed planning and system optimization also for blinds inter panes.

REFERENCES

[1] T. E. Kuhn, Solar control: A general evaluation method for facades with venetian blinds or other solar control systems, pp 648-660, `Energy and Buildings' 38, June 2006

[2] T. E. Kuhn, Solar control: Comparsion of two new systems with the state of the art on the basis of a new general evaluation method for facades with Venetian blinds or other solar control systems, pp 661-672, `Energy and Buildings' 38, June 2006