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Publication date:
2015

Document Version
Peer reviewed version

Citation for published version (APA):

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The future 2015 Danish Building Regulations concerning energy performance of multi framed windows

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The future Danish Building Regulation BR 2015 will reduce energy consumption within the building stock. Regarding the very important field windows, it seems that BR 2015 will be based on the same rules as today, except for a simple reduction of the limits for energy loss. Since a big part of the total amount of energy consumption in buildings is lost through windows, and the regulations concerning multi framed windows are already highly problematic today, there is a risk of the problem getting bigger in the future.

RESULTS

The results are shown in Figure 2. The window data are gathered in the spring 2013 and give information about the energy gain for various window options, which have been presented on their hompages. Unfortunately it seems that all public energy calculators have stopped, except for windows with secondary glazing, so it has not been possible to get newer data except for the recently introduced Velux Classic - but only for the Eref and not for a cross-window in one size without any muntins.

The three green curves show windows with double glazing. The two lower curves show different examples of double glazing, this indicates that there is only very little obtained with the third layer of glass where the IG-unit is in the secondary glazing and only one layer of energy coating (1+2). The +1 window has one hard coated energy glass in the secondary glazing. In the corner upper green curve is the energy efficient windows for all sizes, except for the Eref. This +2 window is equipped with two layers of coating in the IG-unit, one self and one hard.

The blue curves show different u-values-aluminium and the yellow is a wooden window, all of them designed with IG-units. Triangular labels are windows with three layer high efficient energy IG-units [2] and diamond labels are two layer IG-units [2]. It is clearly seen from figure 2 that the traditional wooden windows provided with secondary glazing have almost the same energy performance regardless of the window design. The curves are rather horizontal meaning that they are relatively poorly for the Eref compared to the IG-units, but much better for divided windows with mulins, muntis and transom - and for noise reducing panes. The main reason why they are a little worse with multins is due to the shadow cast by the muntins.

As the majority of existing buildings are provided with triple glazing IG-units, there is no problem with energy efficiency for the Eref, but it is important to remember that the BR 2010 lowered to less than 1.80 W/m²K for windows facing the outside, and not as today where there are only limits for windows facing rooms being heated to 5 K less than the heated room - but with no limits against the outside. All future studies should include windows with secondary glazing and standards. Regarding sustainability, noise reduction, total economic and energy performance of windows in typically design and sizes.

REFERENCES

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