The cost efficiency of improved roof windows in two well-lit nearly zero-energy houses in Copenhagen

Roof windows are efficient and flexible daylight sources that are essential in certain types of houses if they are to achieve sufficient daylighting throughout. Previous studies have indicated that, for such buildings to meet nearly zero-energy targets in an easy and robust way without compromising on daylighting and thermal comfort, the thermal properties of roof window glazing, frames and junctions need to be considerably improved. However, the barriers to improving roof windows to levels above the current best standard practice remain great so long as we do not know the economic benefits of such improvements. The aim of this study was to quantify the scope for investing in improved roof window solutions in buildings insulated to consume nearly zero-energy. Based on two single-family houses in Copenhagen with typical roof windows and adequate daylighting, the study identified the prices at which various types of roof window improvements would have to be made available to achieve the same cost efficiency as improved insulation. If the improvements can be made available for less than these prices, the installation of improved roof windows would make it cheaper to construct well-lit and comfortable nearly zero-energy homes.

General information
Publication status: Published
Organisations: Department of Civil Engineering, Section for Building Energy
Contributors: Skarning, G. C. J., Hviid, C. A., Svendsen, S.
Pages: 399-417
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Energy and Buildings
Volume: 140
ISSN (Print): 0378-7788
Ratings:
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 4.96 SJR 2.061 SNIP 2.12
Web of Science (2017): Impact factor 4.457
Web of Science (2017): Indexed yes
Original language: English
Keywords: Roof windows, Cost-effectiveness, Window design, Glazing, Frame, Solar-control coating, Space heating, Climate-based daylighting, Adaptive thermal comfort
Electronic versions:
Untitled.pdf. Embargo ended: 04/02/2019
DOIs:
10.1016/j.enbuild.2017.01.080
Source: FindIt
Source ID: 2352261322
Research output: Contribution to journal » Journal article – Annual report year: 2017 » Research » peer-review