

Popular science summary of the PhD thesis

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Title of the PhD thesis	Fire Performance of Windows in Low-Energy Buildings
PhD school/Department	DTU Construct

Science summary

* Please give a short popular summary in English (approximately half a page) suited for the publication of the title, main content, results and innovations of the PhD thesis also including prospective utilizations hereof. The summary should be written for the general public interested in science and technology.

Windows play an important role in fire safety engineering for several reasons. Firstly, broken windows act as openings for supply of oxygen to the fire. Since fires need oxygen for combustion, the size of the opening can determine the fire development and, ultimately, the thermal exposure on the building structures. Secondly, windows are a barrier between the interior and the exterior. Therefore, the breakage of windows can allow fires to spread between a building and its surroundings, which is relevant for the spread of e.g. façade fires, wildfires, and other external fires.

This thesis has investigated how different parameters affect the fire performance of windows through series of experimental studies, and how the performance can be assessed using computer models. Generally, the results show that there is a distinct difference in the fire performance of traditional and modern windows, with modern windows having significantly higher performance. This means that the resulting ventilation conditions in fires may be different depending on the window, and that may affect the fire resistance of the building structure negatively if not accounted for. On the other hand, modern windows may reduce the risk of fire spread between the outside and inside of a building. These findings should be considered when designing new buildings and when renovating older buildings that may rely on assumptions regarding ventilation conditions that will no longer be valid, if windows are upgraded.

Please submit the summary to the department PhD coordinator together with your thesis