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TM59: Assessment of Overheating risk in homes

Recent evidence has shown that overheating risk needs to be taken seriously in the residential sector. Many new or refurbished homes have designs that contribute to overheating risk by, for example, having high proportions of glazing (resulting in excessive solar heat gains), inadequate natural ventilation strategies or mechanical ventilation systems that are not delivering intended air change rates. The health and wellbeing impacts of overheating can be significant for residents, resulting in stress, anxiety, sleep deprivation and even early deaths in heat waves, especially for vulnerable occupants. The situation is predicted to get worse. The Committee on Climate Change has estimated that mortality rates arising from overheating could rise from 2000 per year in 2015 to 7000 per year by the 2050s.

Assessing overheating risk in homes is a complex issue and not adequately assessed by building regulations. Indeed, it would be wrong to assume that a home that complies with building regulations that were designed to focus on energy conservation also gives sufficient assurance of avoidance of overheating. Hence the recommendation that comfort conditions are separately assessed if it is felt that there could be a risk. Many factors influence overheating in homes, including the intensity of heat gains, occupancy patterns, orientation, dwelling layout, shading strategy, and ventilation method. Dynamic thermal modelling can be used to simulate the internal temperature conditions and will therefore help establish whether threshold conditions of discomfort will be reached.

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Establishing overheating risk has been a requirement of The London Plan since 2016 and is slowly filtering out to be considered by many local authorities throughout the country.

L2 Energy Consulting have been providing TM59 Overheating Analysis on residential developments for over the last 3 years and our experience tells us that SAP Calculations do not deal with overheating in anywhere near the level of complexity the subject deserves.

Without Dynamic Simulation Modelling where hourly weather data, shading, wind speed and direction, free aperture area of windows, internal air movement are all considered, overheating risk cannot be analysed accurately.
SAP Calculation tools are simply not sophisticated enough, and with the trend to build beautiful homes with extensive glazing the risk of overheating has never been higher.

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