Are typical radiators over-dimensioned? An analysis of radiator dimensions in 1645 Danish houses - DTU Orbit (16/12/2018)

Are typical radiators over-dimensioned? An analysis of radiator dimensions in 1645 Danish houses

This study analyses the heat load in a total of 11,584 rooms in 1645 Danish houses and the heat output of the radiators in them to evaluate whether typical radiators are over-dimensioned. The aim was to find out whether radiators in existing houses are suited for low-temperature district heating. We found that new houses are generally more likely to have over-dimensioned radiators, though the heat output of the radiators installed varies a great deal. We also found that many old houses can be equally fit for low-temperature district heating, especially if they have been through some energy renovation. Our results show that approximately 80% of heating systems are over-dimensioned relative to their current design heat load. This share will rise to about 92% as expected energy renovations are carried out towards 2050. Houses with currently over-dimensioned heating systems can be heated with supply temperatures below 60°C for most of the year. Due to extreme design conditions, even under-dimensioned heating systems can be operated with low temperatures for much of the year, although slightly higher supply and/or return temperatures would have to be accepted.

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