Low-temperature heating provides an efficient way of heating our buildings. To obtain a high efficiency it is important that
the heating systems in the buildings are operated with both low supply and return temperatures. This study set out to
investigate how typical assumptions in the modelling of heat emissions from existing hydraulic radiators affects the heating
system return temperatures calculated in a building simulation model. An existing single family house with hydraulic
radiators was modelled in the simulation program IDA-ICE. Simulations were performed with various levels of detail and
the calculated indoor temperatures and radiator return temperatures were compared to temperatures measured in the
case house. The results showed that the detail of the simulation model has a large influence on the results obtained. The
estimated return temperatures from the radiators varied by up to 16 degrees C depending on the assumptions made in the
simulation model. The results indicated that a detailed building simulation model can provide a good estimate of the actual
heating system operation, provided that actual radiators and realistic indoor temperatures are taken into account in the
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