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UNDERFLOOR HEATING INFLUENCE ON THERMAL COMFORT BY THE GLAZED OUTSIDE SURFACES

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ABSTRACT

In recent years underfloor heating is getting more and more popular as a whole heating system to all premises, not only the bathrooms. Share of underfloor heating, compared to such traditional heating systems like radiators or air heating systems, is increasing, thanks to better insulation level, higher comfort level and potential to use such modern energy sources as heat pumps, that use ground water, soil or air energy. Relative low temperature in heating mode and high temperature in cooling mode and minimum temperature difference between supply and return allows increasing COP of heat pump or gas condensation boiler.

In the office buildings usage of traditional underfloor heating/cooling system is rare and the so called Thermo-Active-Building–System (TABS) can be implemented in building structure at relatively low costs. A TABS is a water based heating and cooling system, where the pipes are embedded in the central concrete core of a building construction. The heat transfer takes place between the water (pipes) and the concrete, between the concrete core and the surfaces to the room (ceiling, floor) and between the surfaces and the room.

Often architects and customers are interested in installing such systems, but one of the main concerns is about thermal comfort next to glazed surfaces in residential buildings as well in office buildings. The aim of the paper is to analyse thermal comfort of people near the windows, taking into account presence of floor heating system in the room and comparatively low outside calculation temperatures. Is there a need to install additional heat emitters by the windows to assure allowable thermal conditions?