



Experimental and Numerical Investigations of Fire Resistance of Novel Timber-Concrete-Composite Decks

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Summary:

A wood-concrete composite deck is presented, where wooden beams are placed in the compression side and the concrete layer is in the tension side. The main motive for this unusual setup is the better fire resistance of the system. The composite system was investigated under fire conditions. Experimental investigations were conducted on a small section of the structure in order to analyze the behaviour of the system. The specimen was subjected to the ISO-834 standard temperature-time curve with the concrete slab exposed to fire. Subsequently, the experiment was modeled using a commercial software package, and a transient thermal analysis was performed with temperature dependent material properties. The temperature profiles for all the materials are adequately comparable from both the investigations, i.e. experimental and numerical. The validated numerical model allows modifying geometrical parameters and determining fire-resistance ratings of different system configurations.

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Resource Link

https://www.researchgate.net/profile/Martin_Schollmayer2/publication/259946739_Experimental_and_Numerical_Investigations_of_Fire_Resistance_of_Novel_Timber-Concrete-Composite_Decks/links/560b9fcb08ae4d86bb14d5d4/Experimental-and-Numerical-Investigations-of-Fire-Resistance-of-Novel-Timber-Concrete-Composite-Decks.pdf