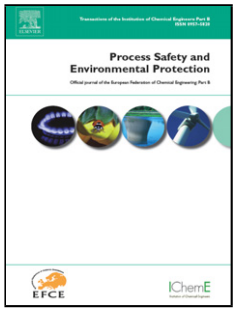

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Experimental and numerical study of the behavior of LPG tanks exposed to wildland fires

Revised Version

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ABSTRACT

The safety of small and medium LPG (liquefied petroleum gas) storage tanks in civil and industrial facilities when affected by forest fires in the framework of Wildland-Urban Interface (WUI) was investigated. Large scale experimental tests were carried to characterize the behavior of LPG tanks in case of distant source radiation caused by forest fires. A data set was obtained and used for the validation of a dedicated two-dimensional computational fluid dynamic (2D CFD) model for the analysis of pressure build-up in vessels exposed to different types of transient heat radiation, featuring different geometry types and operating conditions. The combined experimental and numerical analysis allowed determining the critical exposure conditions for LPG vessels. Specific key performance