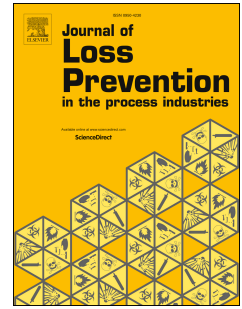


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Abstract

This paper presents a comprehensive safety design of blast wall layout on a cylindrical Floating Liquefied Natural Gas (FLNG) platform. Comparing to the mitigation measure – safety gap investigated previously (Li et al., 2016a; Li et al., 2016b), blast wall is a better option to be utilized in the congested areas with space limitation. Both of deterministic and probabilistic studies on the cylindrical FLNG platform with and without blast walls subjected to gas dispersion and explosion are conducted. The Computational Fluid Dynamics (CFD) simulation results of more than 120 gas cloud sizes and 16,000 gas explosion overpressures indicate that blast walls are exclusively beneficial for mitigating of flammable gas cloud and explosion overpressure, if the initial gas leak rates are high momentous. A series of different blast wall layouts are designed for the cylindrical FLNG. By taking all uncertainties including different leak rates, leak locations, and gas cloud conditions etc. into account, the optimal blast wall layout with lowest explosion overpressure exceedance frequencies is determined.

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