

Computational and Experimental Fluid Dynamic Study of Thermal Radiation Behavior of Heat Shield

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Summary

In offshore plant and FPSO topsides, the probability against fire hazard is existed due to complicated processing such as production, storage and offloading oil and gas. High temperature and heat flux from fire accident cause a serious damage on human, environment and primary structures.

The aim of this study is to analyze behaviors and reduction effect of thermal radiation by various heat shields through computational and experimental method.

In this test, flat plate type, corrugated plate type, perforated plate type and wire mesh type heat shield were used. Heat flux and temperature were measured at locations behind the heat shield. CFD simulation is used to simulate radiation model through ANSYS CFX. To obtain ideal modeling technique of radiation behavior, various geometrical models were used to validate result between test and CFD simulation of four types of heat shield. The result of this study will be a useful data base for heat shield and structure design.

