

# Yoon Jeoung Ko

Thesis

CFD Study of Balcony Spill Plumes: Focused on the Balcony Area

Abstract

This thesis presents the results of an in-depth investigation of air entertainment in balcony spill plumes. The focus of this research was the smoke flow under the balcony area and the rotating regions using CFD modeling and full-scale experiments. Comparisons between model predictions and experimental data indicate that the CFD predictions agree well with experimental data both of which show a large degree of air entertainment into the rotating flow. Mass flow rates of vertical spill plumes near the balcony area were examined to evaluate the applicability of existing balcony spill plume correlations. The results of this study were used to develop an empirical correlation to calculate air entertainment rate at the spill edge. The correlation considers the various factors affecting air entertainment under the balcony area and the rotating region.

Degree

M.A.Sc.

Completion

2006

Supervisor

Hadjisophocleous