



Investigation of Balcony Plume Entrainment

Liu, F.; Nielsen, Peter V.; Heiselberg, Per; Brohus, Henrik; Li, B. Z.

Published in:

International Conference on Sustainable Development in Building and Environment : Abstracts

Publication date:
2009

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Liu, F., Nielsen, P. V., Heiselberg, P., Brohus, H., & Li, B. Z. (2009). Investigation of Balcony Plume Entrainment. In *International Conference on Sustainable Development in Building and Environment : Abstracts: 28-30 October 2009, Chongqing* (pp. 33)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Investigation on Balcony Plume Entrainment

Fang Liu¹, P. V. Nielsen², P. Heilselberg², Henrik Brohus², B. Z. Li¹

(1. *Faculty of Urban Construction and Environment Engineering, Chongqing University, Chongqing, China;*

2. *Department of Civil Engineering, Aalborg University, Aalborg, Denmark*)

Abstract: An investigation on the scenarios of the spill plume and its equation was presented in this paper. The study includes two aspects, i. e. , the small – scale experiment and the numerical simulation. Two balcony spill plume models are assessed by comparing with the FDS (Fire Dynamic Simulation) and small scale model experiment results. Besides validating the spill model by experiments, the effect of different fire location on balcony plume is also discussed.

The results show that the balcony equation in NFPA would give good predictions on the mass flow rate. And the balcony plume entrainment coefficient is independent of the fire location. The Investigations in this paper are useful for the fire engineers in designing smoke control systems.

Keywords: fire plume/ entrainment/ atrium

Foundation item: European Community Asia – link Project Centre of Sino – European Sustainable Building Design & Construction (Contract No. : CN/ASIA – LINK/011(91 – 400)) and the experiment conducted in the Department of Civil Engineering Aalborg University Denmark.

Corresponding author: Liu Fang, female, (1965-), postdoctor, associated professor, research fields: Indoor environment and fire safety science ; Tel: +86 – 23 – 65120756;

E-mail: dliufang@126. com.