

## Document details

[< Back to results](#) | 1 of 1
[↗ Export](#)
[↓ Download](#)
[🖨 Print](#)
[✉ E-mail](#)
[Save to PDF](#)
[☆ Add to List](#)
[More... >](#)

Planning Malaysia  
Volume 16, Issue 2, 2018, Pages 334-344

## A comparative review of design requirements for natural smoke ventilation in hospital buildings (Article)

Ghani, M.Z.A. ✉, Aripin, S.

International Islamic University Malaysia, Malaysia

### Abstract

[View references \(25\)](#)

Smoke is recognized as the main factor of fatality when fire occurred in a building. Thus, smoke management in the building is of paramount importance in order to achieve a tenable indoor environment in the event of fire other than ensuring passive means of escapes to the place of safety. In hospital building, where patients have limited movements, natural smoke ventilation through windows is the most common form of smoke control design. Nevertheless, inappropriate design of natural smoke ventilation through window may result to poor smoke air flow contributing to unwanted toxic gases inhaled by occupants that lead to fatalities in the event of fire. This study aims to analyse the design requirements and specifications of natural smoke ventilation system in buildings by exploring local and other prominent building regulations as well as code of practices around some countries. The study found that smoke ventilation system (natural and mechanical) is usually applied in windowless building, basement and in large open spaces. The natural smoke ventilation system employs smoke vents (gravity vents) located at a higher level in the roof or at the ceiling level. The regulations state that the size of smoke vents for effective natural smoke ventilation is in between 2% to 3% of the floor areas. Most regulations would allow openable windows for smoke ventilation in the event of fire. © 2018 by MIP.

### SciVal Topic Prominence ⓘ

Topic: Fires | Tunnels | tunnel fires

Prominence percentile: 96.939 ⓘ

### Author keywords

Hospital Natural smoke ventilation Smoke vent Windowless

ISSN: 16756215

Source Type: Journal

Original language: English

Document Type: Article

Publisher: Malaysian Institute Of Planners

### References (25)

[View in search results format >](#)

All [Export](#) [🖨 Print](#) [✉ E-mail](#) [Save to PDF](#) [Create bibliography](#)

### Metrics ⓘ

0 Citations in Scopus

0 Field-Weighted Citation Impact



### PlumX Metrics

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

### Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

### Related documents

Use of computational fluid dynamics in optimization of natural smoke ventilation from a historical shopping mall - Case study

Krajewski, G. , Węgrzyński, W. (2018) *AIP Conference Proceedings*

A concept of external aerodynamic elements in improving the performance of natural smoke ventilation in wind conditions

Węgrzyński, W. , Krajewski, G. , Kimbar, G. (2018) *AIP Conference Proceedings*

Impact of Fire Ventilation on General Ventilation in the Building

Zender-Świercz, E. , Telejko, M. (2017) *IOP Conference Series: Materials Science and Engineering*

**NEW!** SciVal Topic Prominence is now available in Scopus.

Which Topic is this article related to? [View the Topic.](#)



- 
- 1 Planning for patient safety  
(2010) *Pediatrics in Review*, 847.  
AAMA
- 
- 2 Bongiovanni, I., Leo, E., Ritrovato, M., Santoro, A., Derrico, P.  
Implementation of best practices for emergency response and recovery at a large hospital: A fire emergency case study  
  
(2017) *Safety Science*, 96, pp. 121-131. Cited 2 times.  
[www.elsevier.com/locate/ssci](http://www.elsevier.com/locate/ssci)  
doi: 10.1016/j.ssci.2017.03.016  
  
View at Publisher
- 
- 3 Chan, L.M.  
Scale modeling of natural vent design and the effects of vent operation time  
(2004) *International Journal on Engineering Performance-Based Fire Codes*, 6 (4), pp. 272-276.
- 
- 4 Chen, H., Liu, N., Chow, W.  
Wind effects on smoke motion and temperature of ventilation-controlled fire in a two-vent compartment  
  
(2009) *Building and Environment*, 44 (12), pp. 2521-2526. Cited 21 times.  
doi: 10.1016/j.buildenv.2009.04.008  
  
View at Publisher
- 
- 5 Hui, M.C.  
An approach to provide cost effective patient fire safety  
(2013) *Asia Pacific Journal of Health Management*, 8 (1), pp. 39-44.
- 
- 6 (2017) *Statistik Kes-kes Kebakaran di Malaysia 2010-2016*  
Jabatan Bomba dan Penyelamat Malaysia [JBPM] . Pusat Sumber Ibu Pejabat Bomba Malaysia
- 
- 7 Jalali, H., Asl, E., Mehr, A., Pourafzali, S., Ghasemi, M.  
Prevention and control of operating room fires: Knowledge of staff employed by selected hospitals of Isfahan University of Medical Sciences  
(2016) *Digital Medicine*, 2 (2), p. 52. Cited 2 times.
- 
- 8 Ji, J., Gao, Z.H., Fan, C.G., Sun, J.H.  
Large Eddy Simulation of stack effect on natural smoke exhausting effect in urban road tunnel fires  
  
(2013) *International Journal of Heat and Mass Transfer*, 66, pp. 531-542. Cited 44 times.  
doi: 10.1016/j.ijheatmasstransfer.2013.07.057  
  
View at Publisher
-