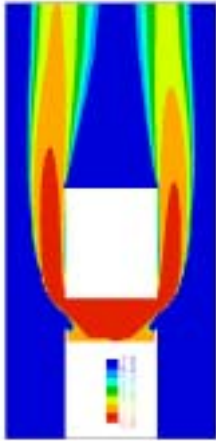




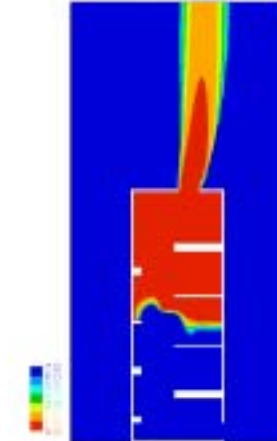
Smoke Ventilation of Common Access  
Areas of Flats and Maisonettes (BD2410) -  
Final Factual Report – Appendix Div  
(‘Lobby’ scenario ‘visibilities’ with 2.5 MW  
fire and 0.78 m dwelling & stair door  
openings)

*The authors of this report are employed by BRE. The work reported herein was carried out under a Contract placed by the ODPM. Any views expressed are not necessarily those of the ODPM.*

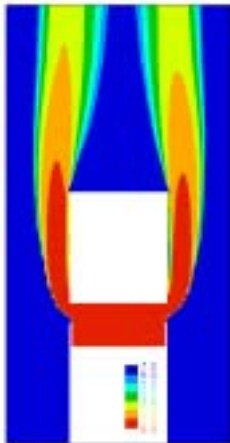
bre



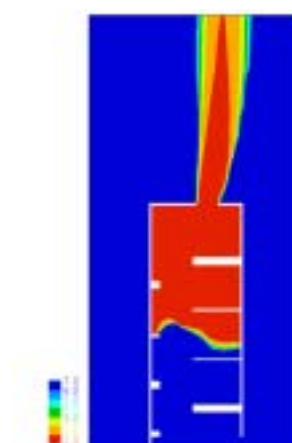
Lobby: L: 1.5m<sup>2</sup> high-level wall vent  
R: 1.5m<sup>2</sup> high-level wall vent  
*Mean temp in occupied space = 134°C*



Stair: Top and bottom vent

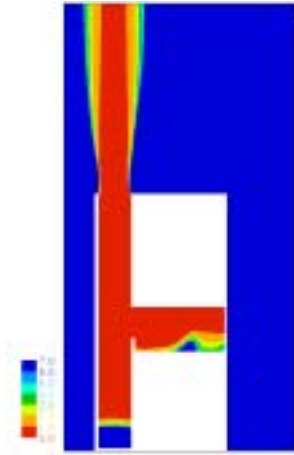


Lobby: L: 1m<sup>2</sup> high-level wall vent  
R: 1m<sup>2</sup> high-level wall vent  
*Mean temp in occupied space = 281°C*

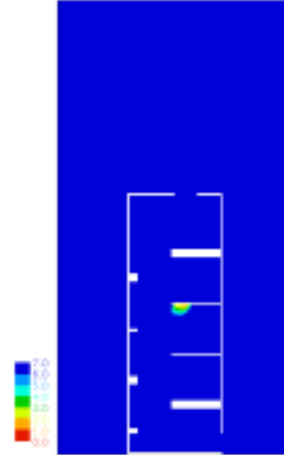


Stair: Top and bottom vent

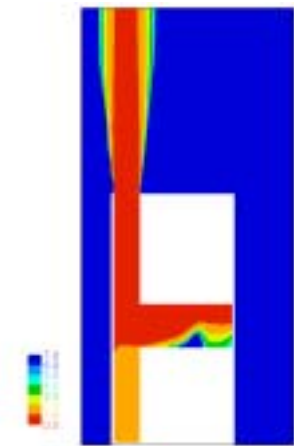




Lobby: L: Natural closed-base, **3m<sup>2</sup>** shaft  
 (1.5m<sup>2</sup> high-level vent to lobby)  
 R: No vent  
**Mean temp in occupied space = 139°C**



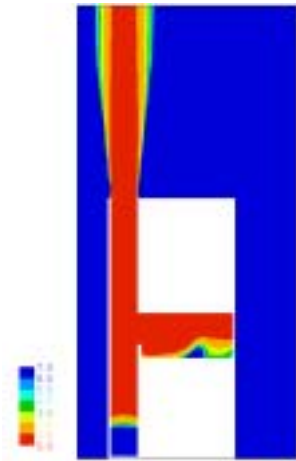
Stair: Top and bottom vent



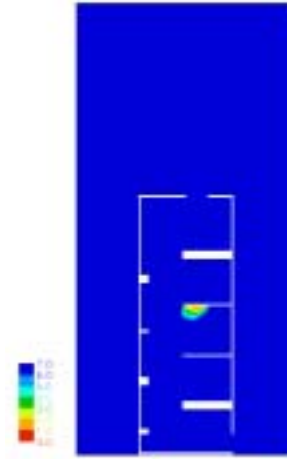
Lobby: L: Natural closed-base, **2m<sup>2</sup>** shaft  
 (2.2m<sup>2</sup> full-height vent to lobby)  
 R: No vent  
**Mean temp in occupied space = 127°C**

NO SMOKE IN STAIR

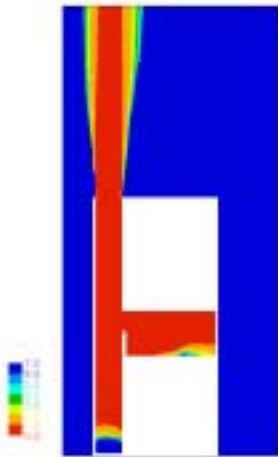
Stair: Top and bottom vent



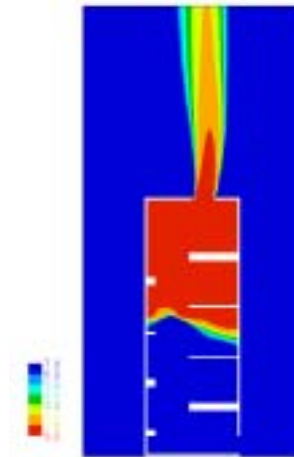
Lobby: L: Natural closed-base, **2m<sup>2</sup>** shaft  
 (1.5m<sup>2</sup> high-level vent to lobby)  
 R: No vent  
**Mean temp in occupied space = 139°C**



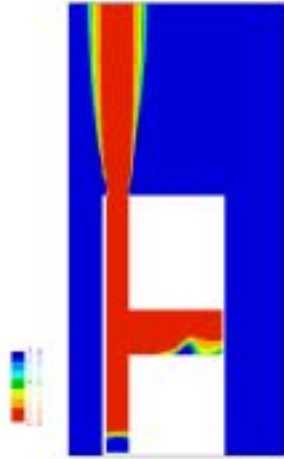
Stair: Top and bottom vent



Lobby: L: Natural closed-base, **2m<sup>2</sup>** shaft  
 (1m<sup>2</sup> high-level vent to lobby)  
 R: No vent  
**Mean temp in occupied space = 192°C**



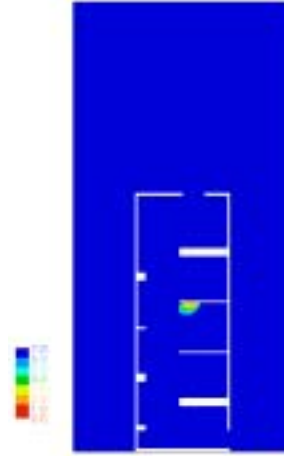
Stair: Top and bottom vent



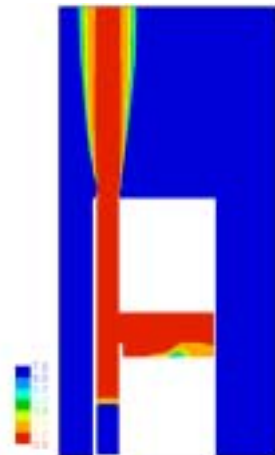
Lobby: L: Natural closed-base,  $1.5\text{m}^2$  shaft  
( $2.2\text{m}^2$  full-height vent to lobby)

R: No vent

**Mean temp in occupied space =  $147^\circ\text{C}$**



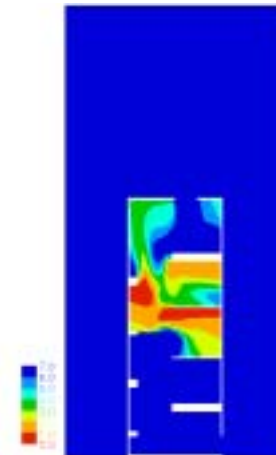
Stair: Top and bottom vent



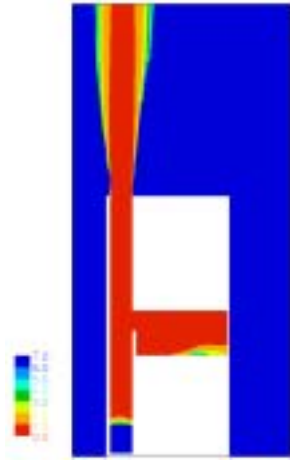
Lobby: L: Natural closed-base,  $1.5\text{m}^2$  shaft  
( $1.5\text{m}^2$  high-level vent to lobby)

R: No vent

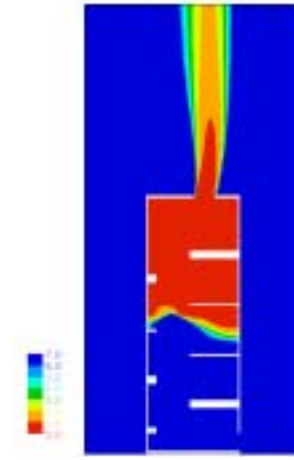
**Mean temp in occupied space =  $163^\circ\text{C}$**



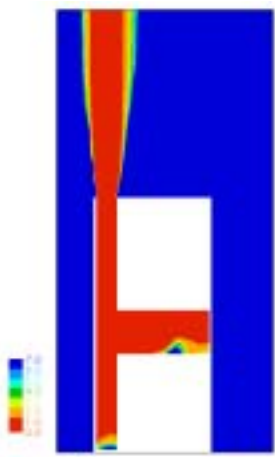
Stair: Top and bottom vent



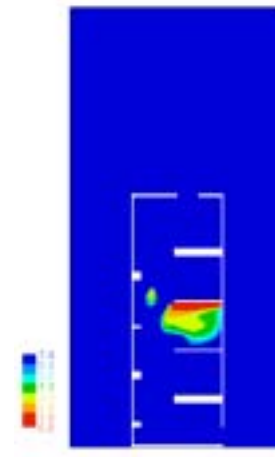
Lobby: L: Natural closed-base,  $1.5\text{m}^2$  shaft  
( $1\text{m}^2$  high-level vent to lobby)  
R: No vent  
*Mean temp in occupied space =  $203^\circ\text{C}$*



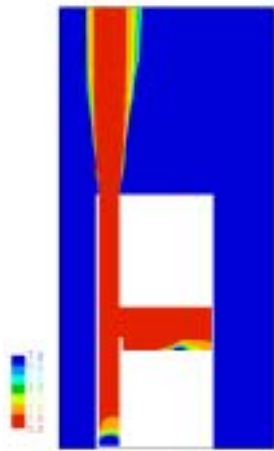
Stair: Top and bottom vent



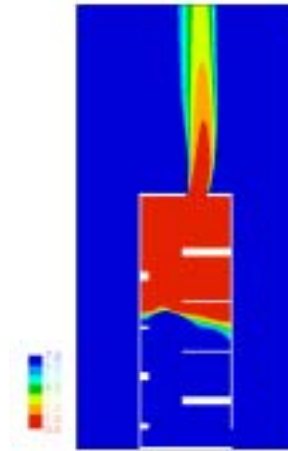
Lobby: L: Natural closed-base,  $1.25\text{m}^2$  shaft  
( $2.2\text{m}^2$  full-height vent to lobby)  
R: No vent  
*Mean temp in occupied space =  $156^\circ\text{C}$*



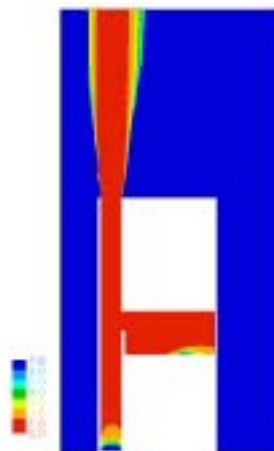
Stair: Top and bottom vent



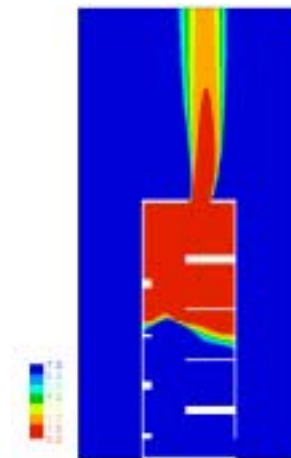
Lobby: L: Natural closed-base, **1.25m<sup>2</sup>** shaft  
(1.5m<sup>2</sup> high-level vent to lobby)  
R: No vent  
**Mean temp in occupied space = 174°C**



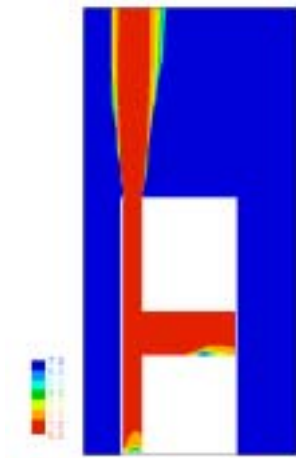
Stair: Top and bottom vent



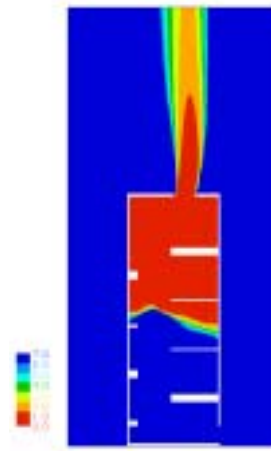
Lobby: L: Natural closed-base, **1.25m<sup>2</sup>** shaft  
(1m<sup>2</sup> high-level vent to lobby)  
R: No vent  
**Mean temp in occupied space = 192°C**



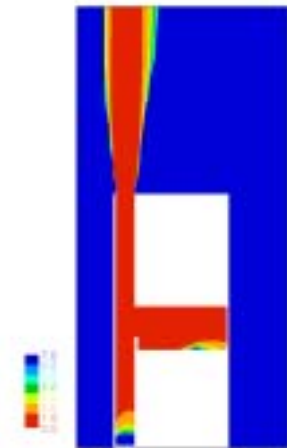
Stair: Top and bottom vent



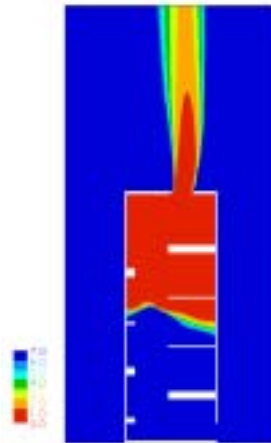
Lobby: L: Natural closed-base, **1m<sup>2</sup>** shaft  
 (2.2m<sup>2</sup> full-height vent to lobby)  
 R: No vent  
**Mean temp in occupied space = 185°C**



Stair: Top and bottom vent



Lobby: L: Natural closed-base, **1m<sup>2</sup>** shaft  
 (1.5m<sup>2</sup> high-level vent to lobby)  
 R: No vent  
**Mean temp in occupied space = 191°C**



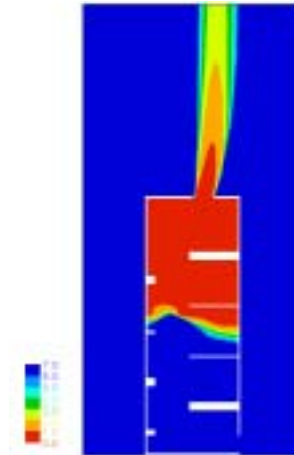
Stair: Top and bottom vent



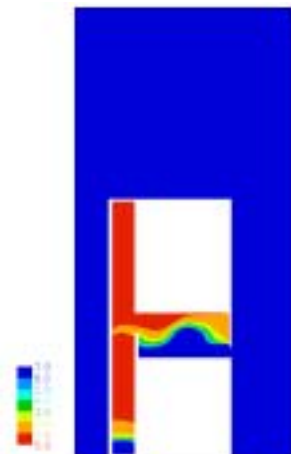


Lobby: L: Mechanical closed-base, **1.5m<sup>2</sup>** shaft  
 (640 ach<sup>-1</sup> (4.9 m<sup>3</sup>s<sup>-1</sup>) and  
 1m<sup>2</sup> high-level vent to lobby)  
 R: 0.5m<sup>2</sup> low-level vent

**Mean temp in occupied space = 135°C**  
**Closed door ΔP = 92 Pa; open door vel = 2.1ms<sup>-1</sup>**



Stair: Top and bottom vent

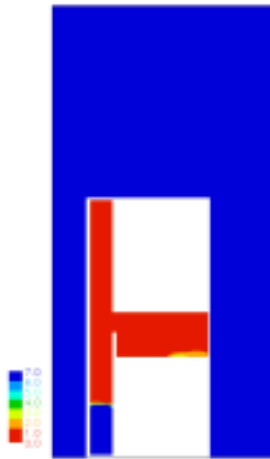


Lobby: L: Mechanical closed-base, **1.5m<sup>2</sup>** shaft  
 (1280 ach<sup>-1</sup> (9.8 m<sup>3</sup>s<sup>-1</sup>) and  
 1m<sup>2</sup> high-level vent to lobby)  
 R: 0.5m<sup>2</sup> low-level vent

**Mean temp in occupied space = 71°C**  
**Closed door ΔP = 365 Pa; open door vel = 4.1ms<sup>-1</sup>**

NO SMOKE IN STAIR

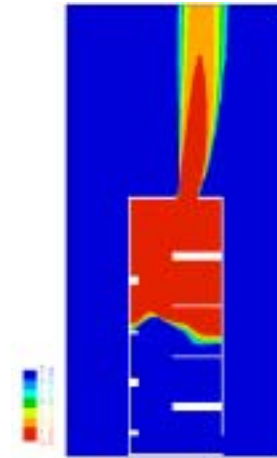
Stair: Top and bottom vent



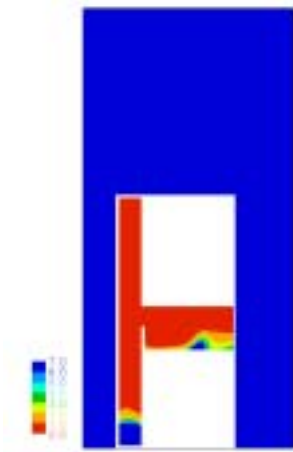
Lobby: L: Mechanical closed-base,  $1.5\text{m}^2$  shaft  
( $320\text{ ach}^{-1}$  ( $2.4\text{ m}^3\text{s}^{-1}$ )) and  
 $1\text{m}^2$  high-level vent to lobby)

R: No vent

*Mean temp in occupied space =  $233^\circ\text{C}$*



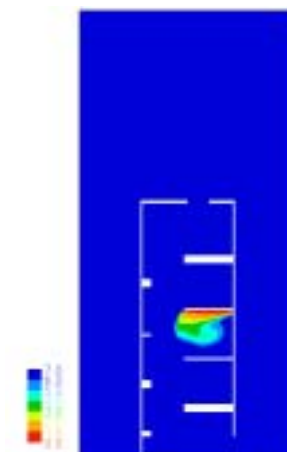
Stair: Top and bottom vent



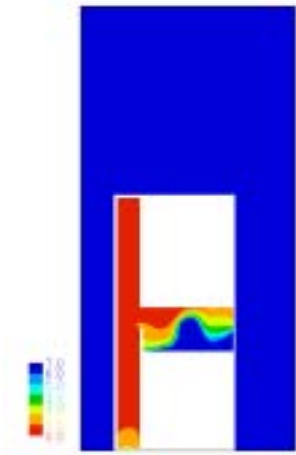
Lobby: L: Mechanical closed-base,  $1.5\text{m}^2$  shaft  
( $640\text{ ach}^{-1}$  ( $4.9\text{ m}^3\text{s}^{-1}$ )) and  
 $1\text{m}^2$  high-level vent to lobby)

R: No vent

*Mean temp in occupied space =  $136^\circ\text{C}$*



Stair: Top and bottom vent



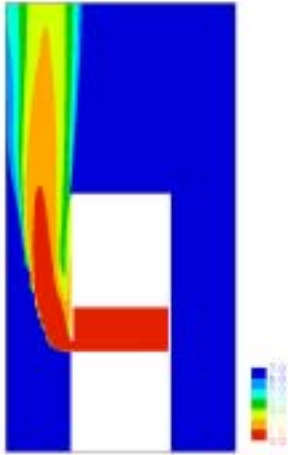
NO SMOKE IN STAIR

Lobby: L: Mechanical closed-base, **1.5m<sup>2</sup>** shaft  
(**1280 ach<sup>-1</sup>** ( $9.8 \text{ m}^3 \text{ s}^{-1}$ ) and  
1m<sup>2</sup> high-level vent to lobby)

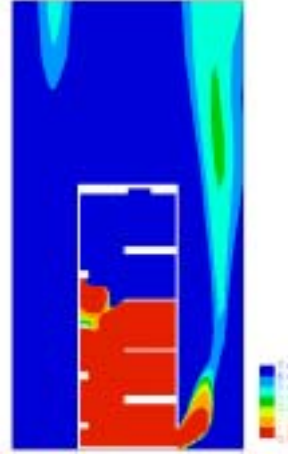
R: No vent

**Mean temp in occupied space = 73°C**

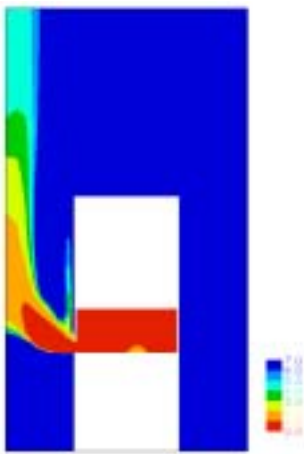
Stair: Top and bottom vent



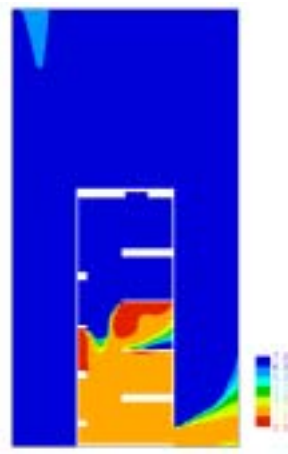
Lobby: L: 0.5m<sup>2</sup> low-level vent  
 R: No vent  
**Mean temp in occupied space = 202°C**  
 Closed door  $\Delta P = 6\text{Pa}$ ; open door vel = 0.4 ms<sup>-1</sup>



Stair: Mechanical supply at top  
 (40 ach<sup>-1</sup> (1.6 m<sup>3</sup>s<sup>-1</sup>)) and  
 and bottom vent



Lobby: L: 0.5m<sup>2</sup> low-level vent  
 R: No vent  
**Mean temp in occupied space = 125°C**  
 Closed door  $\Delta P = 23\text{ Pa}$ ; open door vel = 0.8 ms<sup>-1</sup>



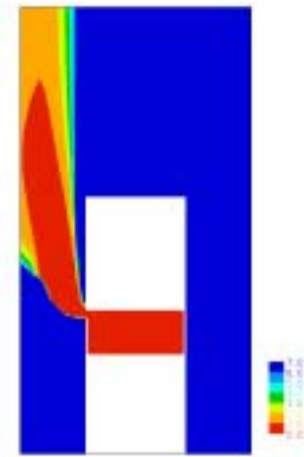
Stair: Mechanical supply at top  
 (80 ach<sup>-1</sup> (3.2 m<sup>3</sup>s<sup>-1</sup>)) and  
 and bottom vent



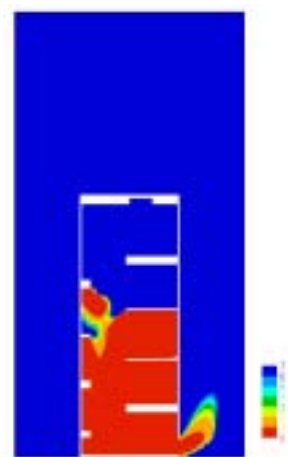
Lobby: L: 0.5m<sup>2</sup> low-level vent  
 R: No vent  
**Mean temp in occupied space = 28°C**  
 Closed door  $\Delta P = 90\text{Pa}$ ; open door vel = 1.6 ms<sup>-1</sup>

NO SMOKE IN STAIR

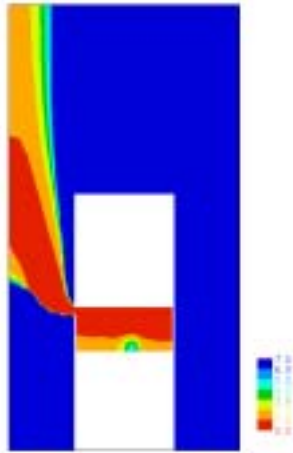
Stair: Mechanical supply at top  
 (160 ach<sup>-1</sup> (6.4 m<sup>3</sup>s<sup>-1</sup>)) and  
 and bottom vent



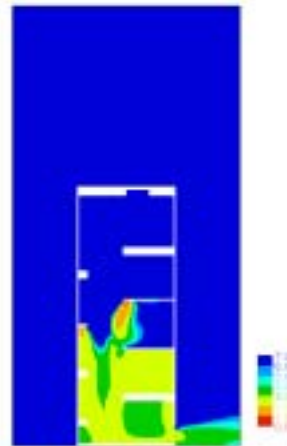
Lobby: L: 0.5m<sup>2</sup> high-level vent  
 R: No vent  
**Mean temp in occupied space = 124°C**  
 Closed door  $\Delta P = 6\text{ Pa}$ ; open door vel = 0.4 ms<sup>-1</sup>



Stair: Mechanical supply at top  
 (40 ach<sup>-1</sup> (1.6 m<sup>3</sup>s<sup>-1</sup>)) and  
 and bottom vent



Lobby: L: 0.5m<sup>2</sup> high-level vent  
 R: No vent  
**Mean temp in occupied space = 69°C**  
 Closed door  $\Delta P = 23 \text{ Pa}$ ; open door vel = 0.7 ms<sup>-1</sup>



Stair: Mechanical supply at top  
 (80 ach<sup>-1</sup> (3.2 m<sup>3</sup>s<sup>-1</sup>)) and  
 and bottom vent



Lobby: L: 0.5m<sup>2</sup> high-level vent  
 R: No vent  
**Mean temp in occupied space = 22°C**  
 Closed door  $\Delta P = 90 \text{ Pa}$ ; open door vel = 1.4 ms<sup>-1</sup>

NO SMOKE IN STAIR

Stair: Mechanical supply at top  
 (160 ach<sup>-1</sup> (6.4 m<sup>3</sup>s<sup>-1</sup>)) and  
 and bottom vent