



# Colt International Ltd

Design considerations for ventilation and smoke control systems when refurbishing a commercial or industrial building  
CPD Technical Seminar 2018





## Certification

of CPD course provision

This is to certify that

**Colt International Ltd**

has been registered as a CPD Course Provider by  
The Chartered Institution of Building Services Engineers (CIBSE)

Accredited from 1st June 2017 to 31st May 2019

Andrew Rowe  
CPD Panel Chair  
CIBSE

Grace Potthurst  
Membership Development Coordinator  
CIBSE

The Chartered Institution of  
Building Services Engineers  
222 Balham High Road  
London SW12 9BS  
T: 020 8675 5211  
E: info@cibse.org  
www.cibse.org



Colt have a number of CPD accredited topics including:

- Car park ventilation
- The general principles of smoke control
- Pressurisation
- Smoke shafts
- Overheating common corridors
- Smoke and fire curtains
- Louvre
- Evaporative cooling



# A brief history of Colt

Colt International Limited



Founded in

**1931**

2017 UK turnover

**£35 million**

2017 Group turnover

**£180 million**

Manufacturing facilities in  
**UK, Holland & Germany**



Expertise built on proven experience | [www.coltinfo.co.uk](http://www.coltinfo.co.uk)

# Accreditations and Memberships

Colt International Limited



## Accreditations

- Achilles
- Altius Gateway
- CHAS
- Construction Line
- Safe Contractor
- Worksafe Contractor
- RoSPA



Chas Accredited



PPQ still required by clients



**CERTIFICATED INSTALLER OF ACTIVE FIRE PROTECTION**



## bsi. Certificate of Registration



ISO 9001: 2015

## MANAGEMENT SYSTEM CERTIFICATE



ISO 14001: 2015

## Memberships





Smoke Control



Climate Control



Louvre & Shading

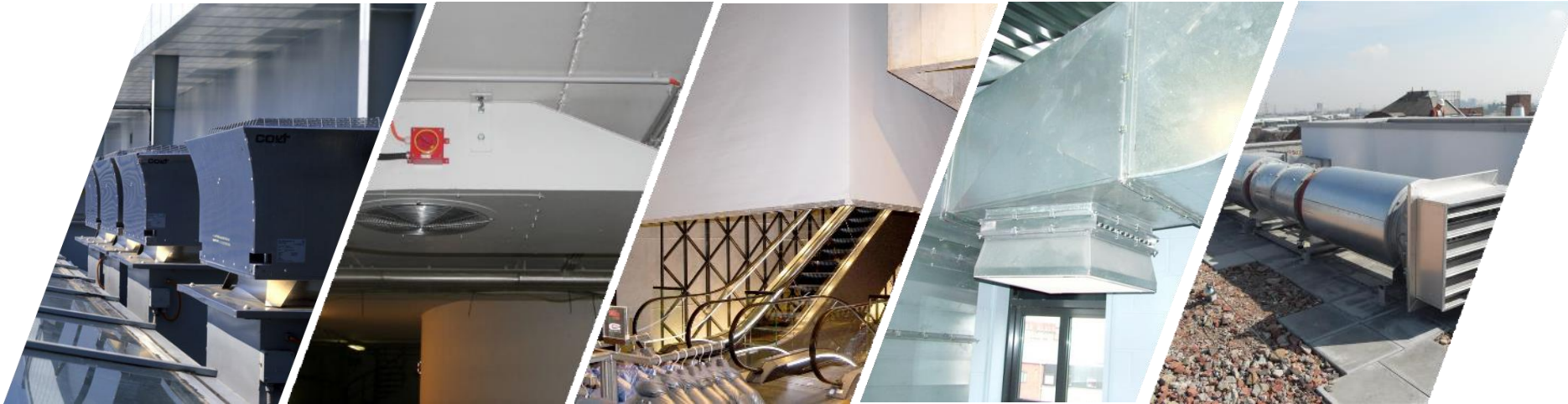


Service





## Smoke Control



**SHEVS**  
Smoke and Heat  
Exhaust Systems

**Car Park**  
Ventilation

**Smoke**  
Containment

**Pressurisation**  
Systems

**Smoke Shaft**  
Systems





Climate control



Natural  
Ventilation

Mechanical  
Ventilation /  
HVAC

Evaporative  
Cooling

Industrial Heating



# Performance & Screening Louvre

Colt International Limited



Louvre



Screening

Ventilation &  
Rain Defence

Shading

Acoustic







## Service



24 hour call out

Nationwide Coverage

Spare Parts

Surveys



### The common changes, issues and solutions for:

1. Factories, warehouses, retail sheds
2. Shopping Centres
3. Atria
4. Multi-storey buildings
  - Commercial
  - Residential
5. Car parks



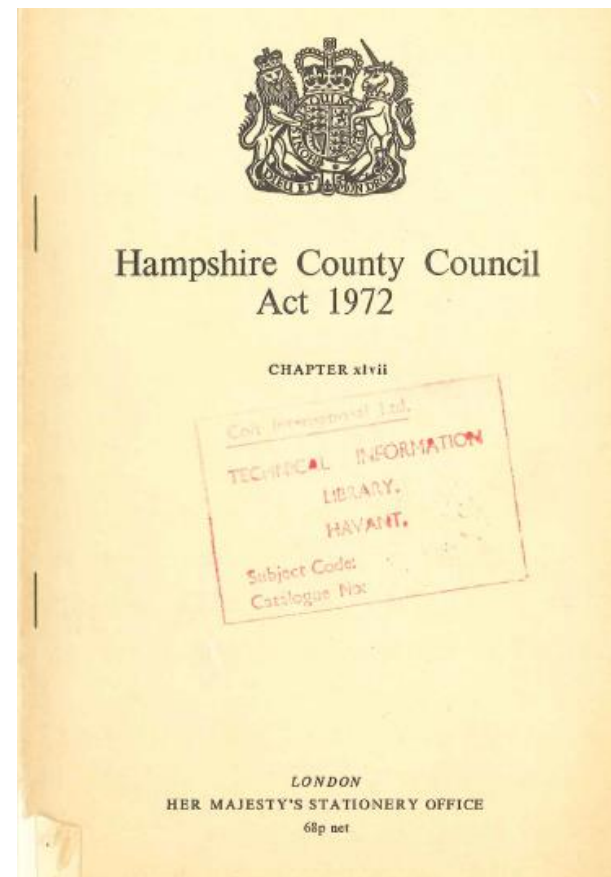
# Single storey buildings

Design considerations for ventilation systems when refurbishing a building 2018



## Systems installed under Local Acts

- Fire protection requirements now repealed
- No legal requirement for smoke vent if otherwise compliant
- Consider business benefits, options for comfort ventilation



# Single storey buildings – common changes

Design considerations for ventilation systems when refurbishing a building 2018



## Change of occupier/use

- May adversely affect design fire size
- Existing system may therefore be inadequate

## Change of layout

- New or relocated walls can split smoke zones or cut off access to inlet air
- Mezzanines always have an adverse effect on smoke control

## New plant

- May adversely affect the design fire size

## Increased storage height

- Will increase the design fire heat output
- May necessitate sprinklers

## Tall extensions

- A new and taller adjacent building can cause adverse wind effects on natural ventilation systems



# Single storey buildings - refurbishments

Design considerations for ventilation systems when refurbishing a building 2018



Re-roofing is an opportunity to:

- Review the level of protection
- Replace old equipment
- Improve vent insulation and sealing

**Simply replacing old ventilators on a new roof is a wasted opportunity**



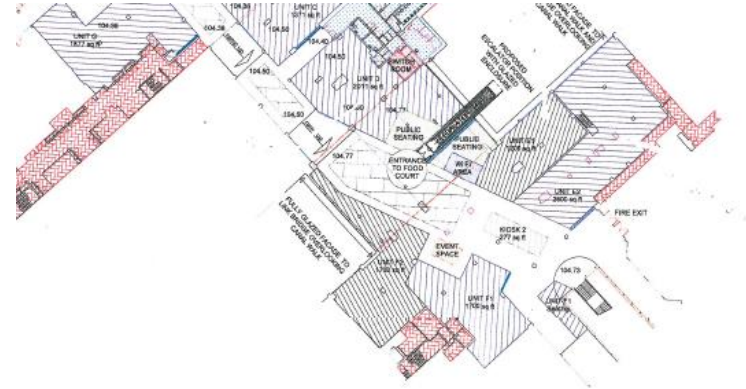
# Shopping Centres – common changes

Design considerations for ventilation systems when refurbishing a building 2018



## Change of unit arrangement

- Does maximum individual frontage in zone increase
- Does individual frontage cross smoke zones
- Does individual frontage cross channelling screens
- Does new unit exceed 1000/1300m<sup>2</sup>
- Is a down stand added/removed from frontage



## Changes to voids

- Filling in can adversely affect smoke flow
- Opening up can adversely affect smoke plume size
- Opening up can allow smoke flow into 2 smoke zones

## Adding kiosks, etc.

- Generally not a problem (in moderation)

## Changes to mall entrance

- Is entrance currently used for air inlet to smoke vent



Re-roofing is an opportunity to

- Review the level of protection
- Replace old equipment
- Improve vent insulation and sealing
- Reconsider maintenance access

**Simply replacing old ventilators on a new roof is a wasted opportunity**



## Opening up floors to the atrium

- May significantly alter the fire protection required

## Changes to entrance doors or low level windows or ventilators

- Often used for make up air supply (manual or automatic) for the smoke ventilation system





# Multi-storey buildings – common changes

Design considerations for ventilation systems when refurbishing a building 2018



1. **Residential buildings** tend to have little change between refurbishments
2. **Commercial buildings** often change layout as tenancies change.

The stair core rarely changes but:

## Pressurised stairs:

- Door changes can affect leakage and require system re-balance
- Office layout changes can adversely affect AAR
- 2 motorised windows/vents? – probably AAR – don't disable or block

## Mechanical shaft system:

- Increasing door size can require system re-commissioning



### 1. Residential

**ADB 2006** made significant changes to ventilation requirements – in older buildings the wrong corridor sections might be ventilated

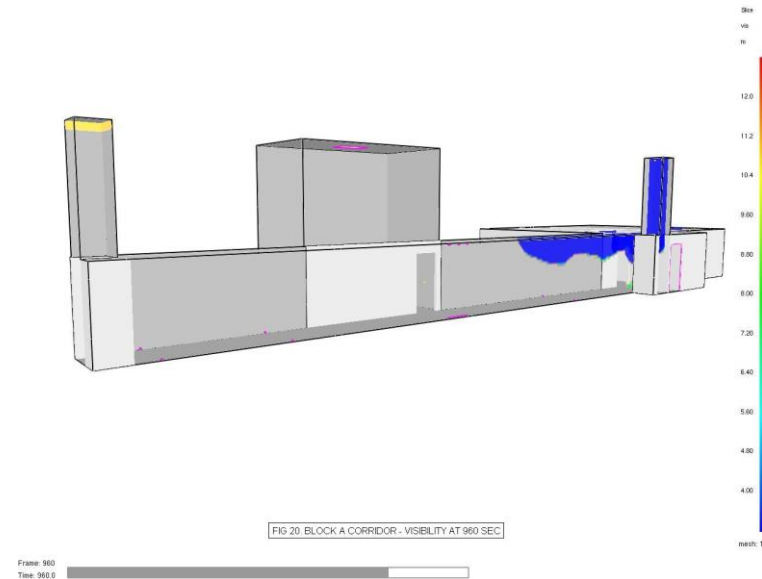
Developments in mechanical shaft systems can allow **extended travel distances** – it might be possible to remove a stair

#### Adding storeys:

- Is fan capacity sufficient
- Is mechanical shaft area still sufficient
- Losing small single stair building status? Ventilation requirements change

#### Natural shaft system:

- Older shafts may have air inlet at the base. Opportunity to remove and recover that space (at cost of changing manual shaft vents to automatic?)



## 2. Commercial

The pressurisation standard changed significantly in 1998. Older systems will be massively undersized by today's standards

### Conversions from residential

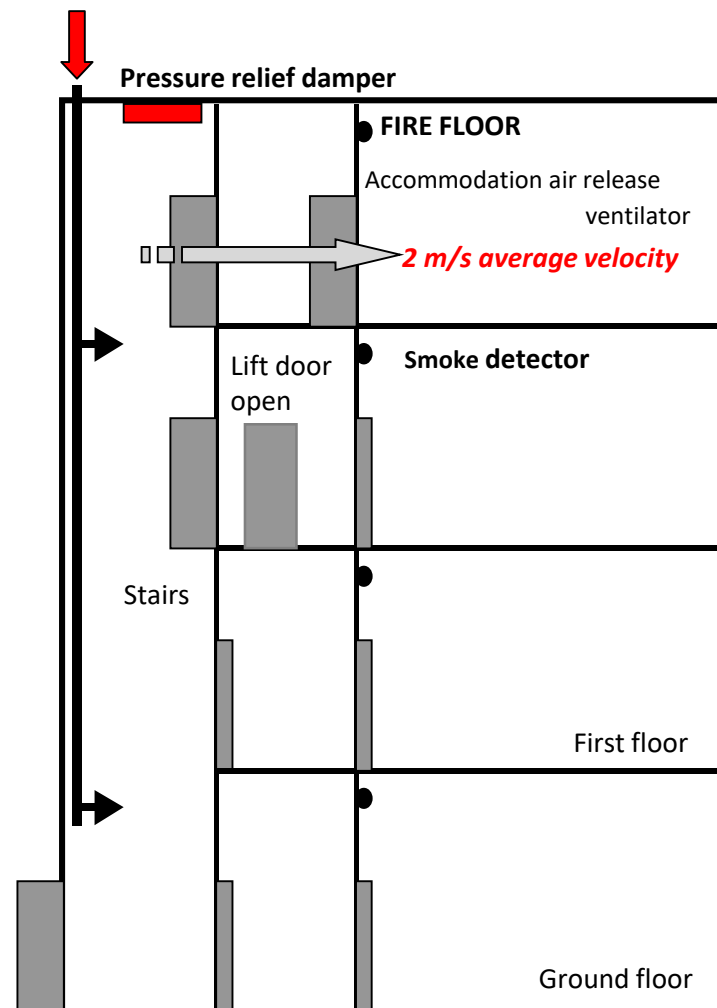
- Pressurisation is often demanded for single stair conversions

### Adding storeys:

- Is fan capacity sufficient
- Is mechanical shaft area still sufficient

### Natural shaft system:

- Older shafts may have air inlet at the base.  
Opportunity to remove and recover that space (at cost of changing manual shaft vents to automatic)



### Adding screens to ventilation openings

- May bring effective ventilation area below permitted minimum
- See ADF for details

### Revised internal layout

- Increase in floor area may require increased ventilation
- Do proposals create any stagnant areas for ventilation

### Adding entrance shutters:

- Ramp is often a major source of make up air for ventilation



### Ducted smoke extract systems

- Opportunity to get rid of ductwork and install impulse fans
- Clears and brightens car park area

### Running costs

- Opportunity to reduce running costs with CO control

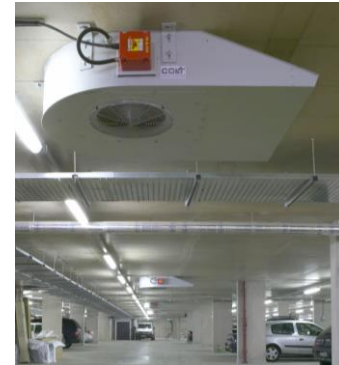


**It's very easy to adversely affect smoke control when making building alterations**

**If in doubt contact your original supplier or service company**

**Building alterations can be an opportunity to make improvements to:**

- Safety
- energy efficiency
- aesthetics





# Q&A Session...

**COLT**

"People feel better in Colt conditions" | [www.coltgroup.com](http://www.coltgroup.com)