



# Colt International Ltd

Commissioning and maintenance of smoke control systems  
CPD Technical Seminar



# Accreditations and Memberships

Colt International Limited



## Accreditations

- CHAS
- Construction Line
- Safe Contractor
- Worksafe Contractor
- RoSPA



PPQ still required by clients



**CERTIFICATED INSTALLER OF  
ACTIVE FIRE PROTECTION**



## Memberships





Smoke Control



Climate Control



Louvre & Shading



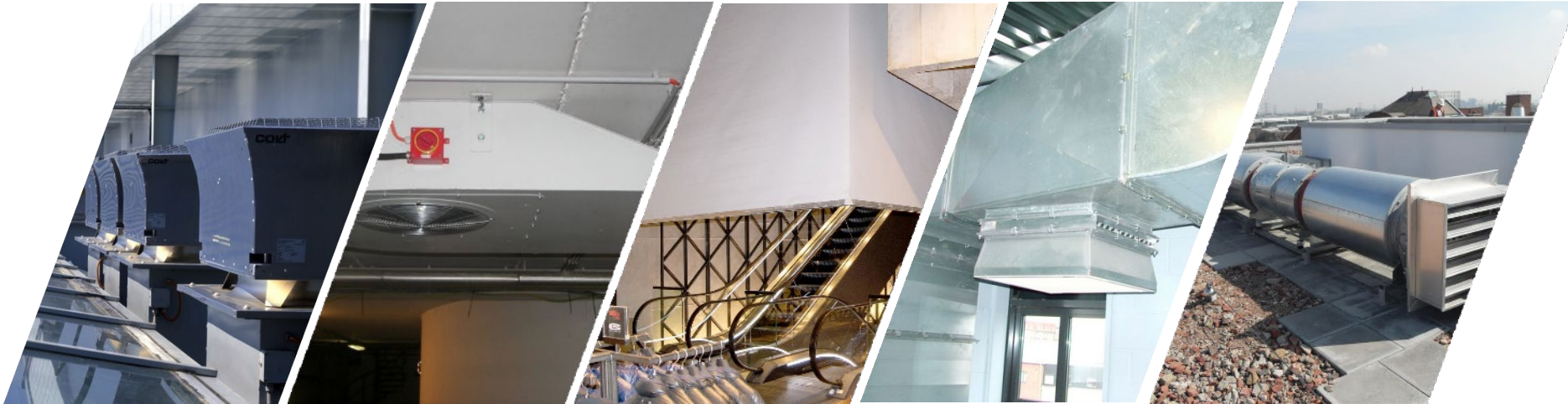
Service







## 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



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## Service



24 hour call out

Nationwide Coverage

Spare Parts

Surveys





# Introduction

Commissioning and maintenance of smoke control systems 2019



- Legislation, standards & guidance
- Commissioning
  - Process
  - Airflow testing
  - Cause and effect
  - Controls
  - Cabling
- Handover
- Testing & maintenance
- Competence





BS 7346-8: Components for Smoke Control Systems – Code of Practice for planning, design, installation, commissioning and maintenance.

*Commissioning: The act of ensuring that all components and the smoke control system are installed and operating as planned.*

BS 9999: Code of practice for fire safety in the design, management and use of buildings

Regulatory Reform (Fire Safety) Order (see Colt whitepaper)



1. Complete installation
2. Check for conformity to approved drawings and design
3. Electrical installation Checks
  - Continuity/Impedance
  - Insulation
  - Resistance
  - Network
4. Electrical Performance Tests (fans):
  - Test incoming voltage to MCC Panel from Primary and secondary supplies
  - Record resistance and current across phases
  - Rotational check – speed and direction where required



## Shaft:

- Fire rated
- Non combustible
- Well sealed –  $3.8\text{m}^3/\text{hr}/\text{m}^2$  at 50 Pa
- Free from services and obstructions

## Fans:

- Temperature Rated
- F300 minimum (CE Marked EN12101-3)
- Provide required duty + leakage
- Overcomes system pressures /resistance
- Right way round

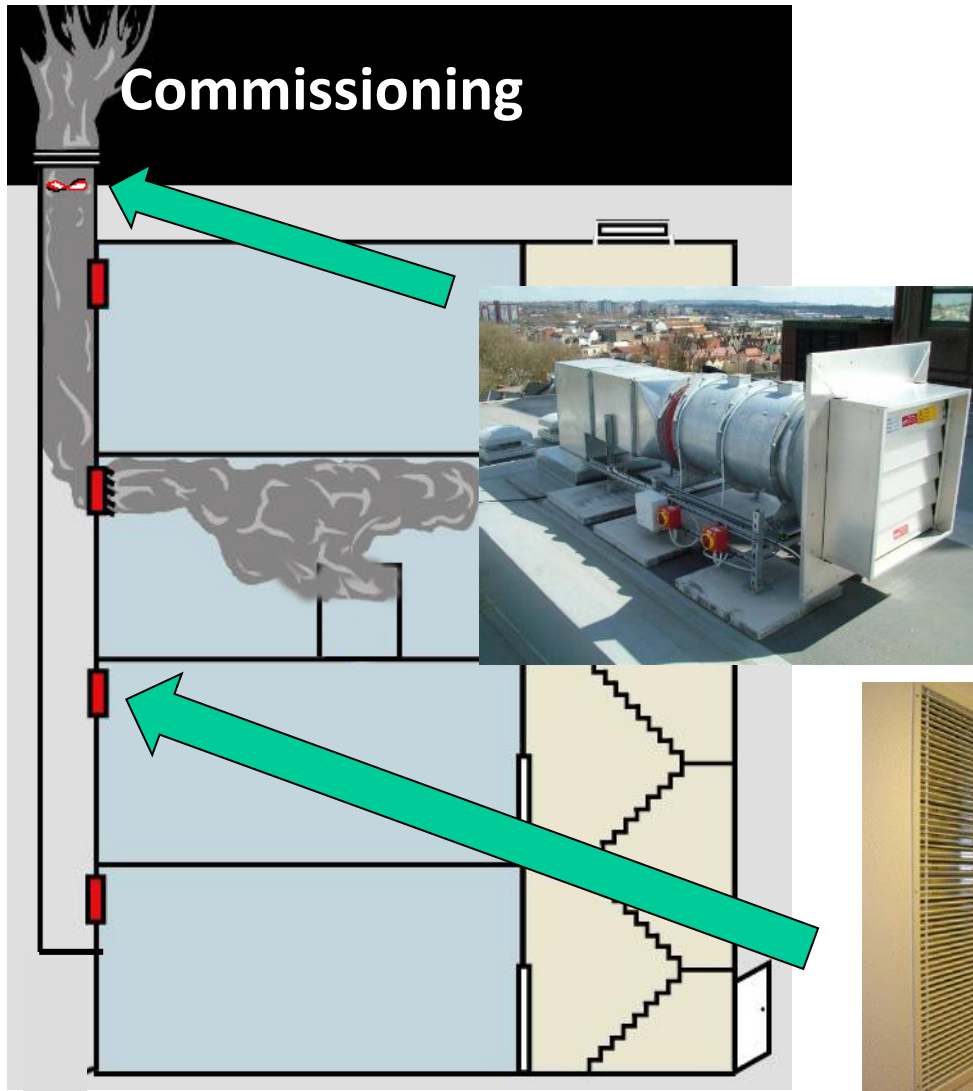
## Smoke Vents:

- CE Marked - EN 12101-2
- Correct control method
- Known ventilation performance



# Commissioning - Process

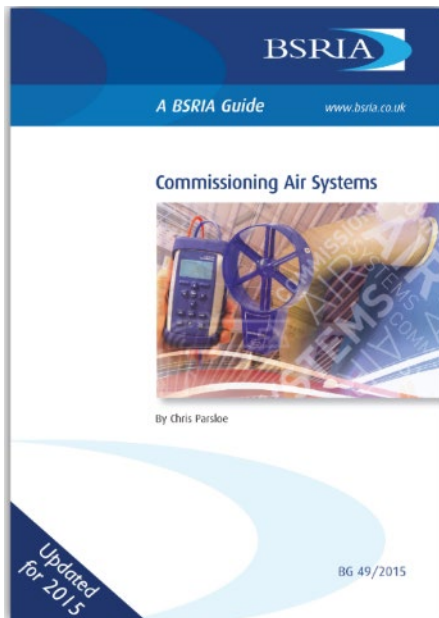
Commissioning and maintenance of smoke control systems 2019





## 5. Mechanical:

- Airflow Tests
- Pressure tests
- Balancing



### **Airflow Test**

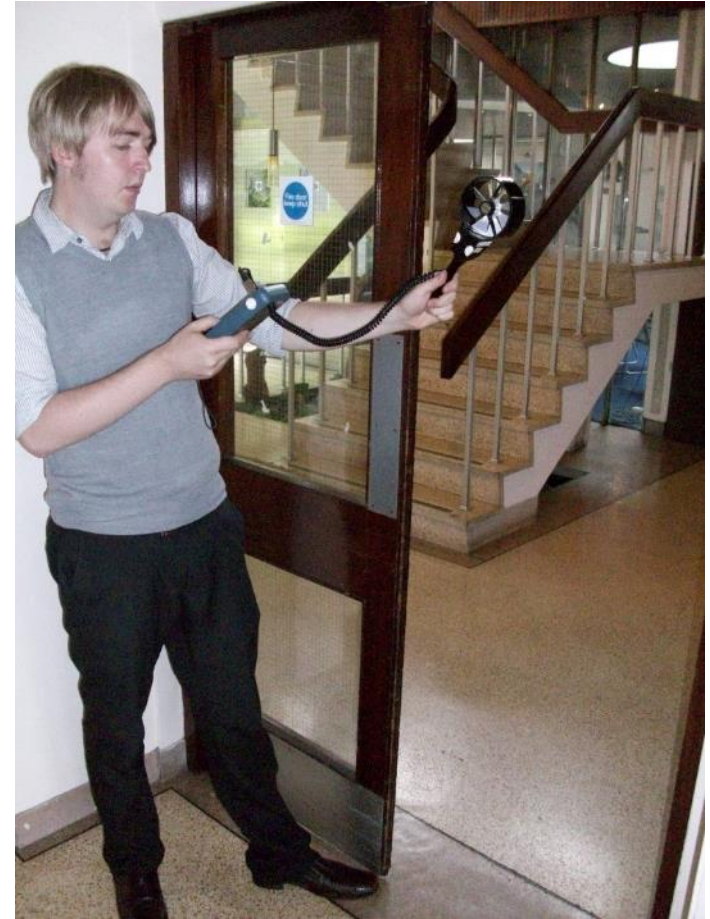
- Manometer + pitot tube
- Rotary Vane Anemometer
- Balometer/Hood

### **Pressure Test**

- Manometer

## Airflow Tests

- Standing out of air stream place RVA across grille/opening
- Avoid locations where air flow across head is non-uniform
- Measure velocity at evenly spread positions
- Do not move the anemometer during readings
- Take arithmetic average of readings, multiply by area and correct if necessary





## 7. Smoke Test - where specifically required





### Client demonstration and training

- Make client familiar with the equipment
- Advise how to operate

### Documentation

- Test Record sheets
- Commissioning Certificate
- Operation and Maintenance Manuals
- As Built Drawings
- Warranty Certificate

**COLT** Commissioning Certificate

Colt International Limited  
Colt House, Ridgeway Office Park  
Radford Road, Petersfield GU32 3DP  
Tel: +44(0)23 8245 1111  
Fax: +44(0)23 8245 4223  
info@coltgroup.com  
www.coltgroup.com  
Registered Office: Colt House, Ridgeway Office Park  
Radford Road, Petersfield, Hampshire GU32 3DP  
Incorporated in England No. 1125500  
VAT Reg No. GB 107 3481 87

Certificate Ref:

Customer / Contract:

Site Address / Building:

Colt Project Reference:

System Description:

End Client:

Email:  Telephone:

This is to certify that the above installation has been commissioned by Colt Commissioning Engineers and that control of the system by the following interfaces has been proved where applicable.

Interfaces	Tested	Comments
<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
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<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
Airflow volumes (Fan Systems Only)	<input type="checkbox"/>	<input type="text"/>
Keys handed over to: <input type="text"/>		
Customer Code Number: <input type="text"/>		
<b>Supporting Documentation:</b> (Drawing Issue refs/Fan Test sheet/Electrical Test Sheet/CFD Report/ANO) <input type="text"/>		
Signed <input type="text"/>	Name <input type="text"/>	Date <input type="text"/>
By Commissioning Engineer for and on behalf of Colt International Limited		
Signed <input type="text"/>	Name <input type="text"/>	Date <input type="text"/>
By Project Manager for and on behalf of Colt International Limited		
Witnessed <input type="text"/>	Name <input type="text"/>	Date <input type="text"/>
For and on behalf of <input type="text"/>		



## Colt Doorman Actuator with fire door to shaft:



- Equivalent to E30S Fire rated construction
- Requires a safety grille across shaft at each level
- Units on other levels must lock closed to prevent smoke transfer
- Local reset



## Mechanical Shafts

Internal Damper to shaft, concealed by decorative grille:



- Equivalent to E30S Fire rated construction
- Motor open/closed
- Mounted as high as practicable?



## Controls:

Should be Fire Alarm/Application Specific.

Designed with resilience, backup and reliability

Not BMS, BAS or HVAC/process control systems

- Open/Closed Protocol?
- Only operate on first activation (subsequent signals are locked out)
- Key enabled Firefighters override

## Cabling:

Fire Rated – BS 8519

Tested for :

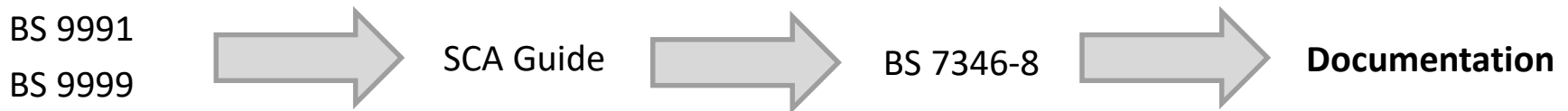
- Heat
- Water Jet
- Impact
- Power cables - FP600
- Control/230Vac - FP Plus

or similar from AEI or Draka





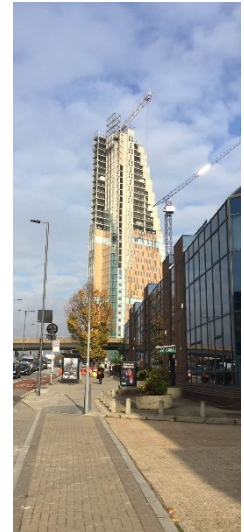
- Smoke control is a life safety system, covered by the Regulatory Reform Order. Testing and maintenance is covered by BS 9999 Annex I
- Regular testing – weekly
- Three monthly full test
- Annual inspection and maintenance by a competent person



Frequency	Facilitator	Scope
Daily	Occupier	Check for faults, alarms, status
Weekly	Occupier	Test
Quarterly	Occupier	Full test
Yearly	Competent person	Maintenance inspection Performance test
5 yearly*	Competent Electrician	Statutory inspection of fixed wiring installation



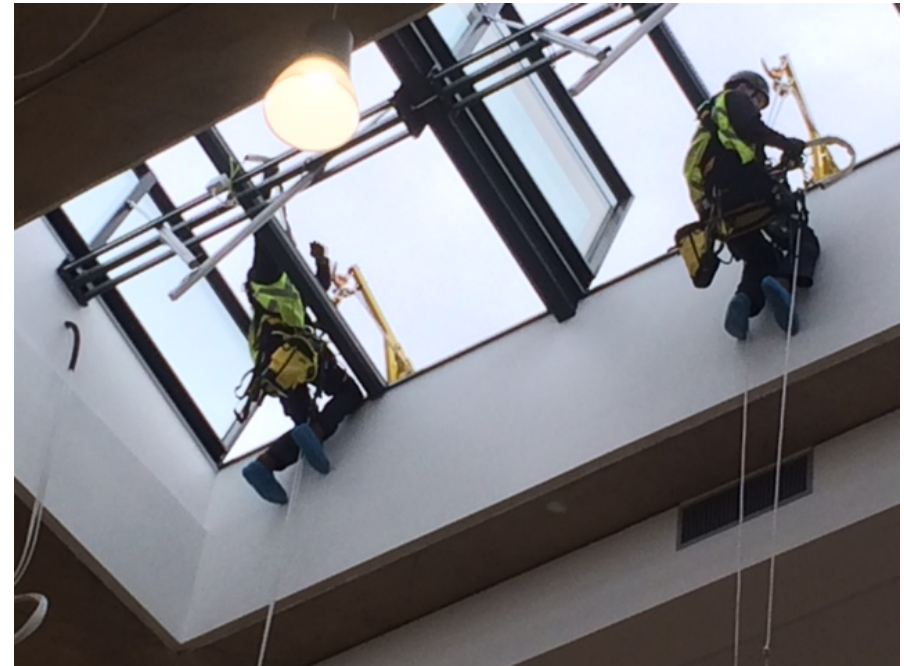
# Competence: Experience



## Service

“A tailored maintenance regime to ensure optimum product/system performance while ensuring legislative obligations are met”

- Programmed preventative maintenance
  - Design implications for accessibility
- Non-routine maintenance/plant replacement
- Continued certified performance





# Testing and maintenance

Commissioning and maintenance of smoke control systems 2019



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# Testing and maintenance

Commissioning and maintenance of smoke control systems 2019



## Designing for maintenance



## Dame Judith Hackitt

### Fire Safety and Construction Process:

“Lack of coherent approach”

“fragmented”

“behind other parts of the world”

***“Competence across the [industry] is patchy”***



# Competency

Commissioning and maintenance of smoke control systems 2019



## Technical Leadership

Smoke Control Association

CIBSE Patrons

ASFP Membership

Education: Webinars and CPD

BSi Standards

EN Standards

ISO Standards

Building Regulation Guidance

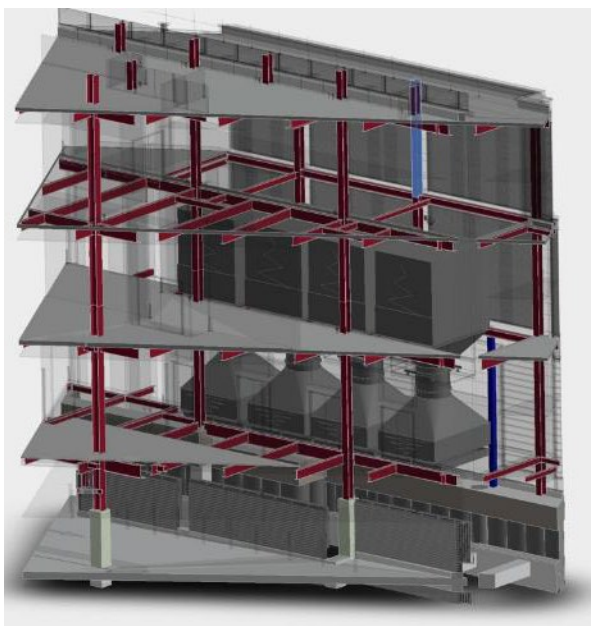
Marketing Strategies

## Design Leadership

Graduate Training

Computational Fluid Dynamics

BIM/Revit 3D design



## Audits

ISO 9001

ISO 14001

ISO 45001

**IFCC SDI 05 & 19**



**CERTIFICATED INSTALLER OF  
ACTIVE FIRE PROTECTION**

*Certificate number: IFCC 3141*

This is to certify that

**Colt International Ltd**

Colt House  
Ridgeway Office Park  
Bedford Road  
Petersfield  
Hampshire GU32 3JF  
Tel: 02392 491184

Installers of the following Smoke / Fire protection systems:  
*Smoke and Fire Curtain Barriers / Smoke Control Systems*

have successfully completed the requirements of IFCC schemes:

- SDI 05 "Requirements for Contractors Installing, Commissioning and Servicing Active and Fixed Barriers for Fire and Smoke Control"
- SDI 19 "Requirements for Contractors Installing Smoke Control Systems"

This includes the verification/inspection of fire strategy verification, system design and installation of smoke & fire protection curtains / smoke control systems, the assessment and verification of the Quality Control system, competency assessment of individuals (as listed in the company's client secure section of the IFCC website) and continuing surveillance including random site audits.



Initial Certification: 27 September 2018

Valid to: 26 September 2023

Issue status: 1

Ian Woodhouse  
Director of Certification

IFC Certification Ltd, 20 Park Street, Prince Consort, Buntingford, Cambridgeshire, IP27 5MJ, UK  
Tel: +44 (0)1464 275000 Fax: +44(0)1464 276002 E-mail: [info@coltinfo.co.uk](mailto:info@coltinfo.co.uk) Web: [www.coltinfo.co.uk](http://www.coltinfo.co.uk)  
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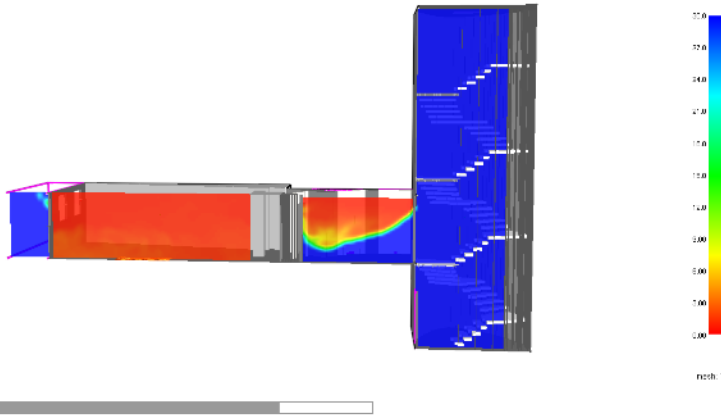


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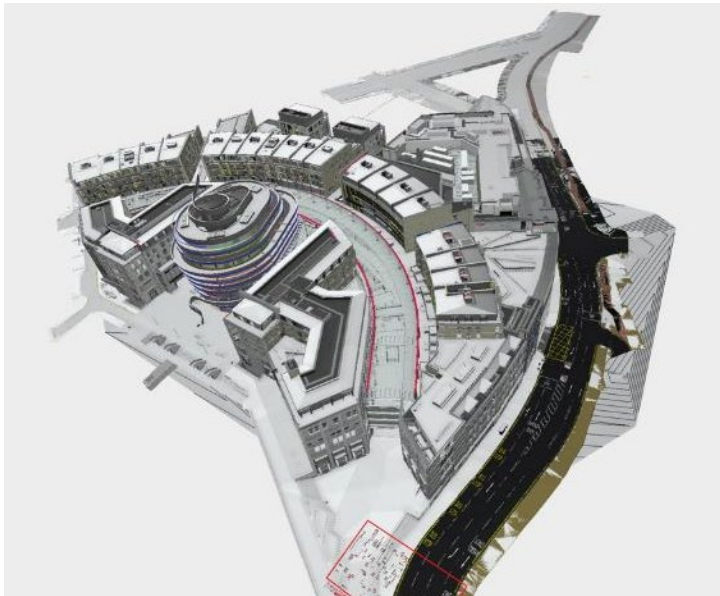


# Competency

Commissioning and maintenance of smoke control systems 2019



## Computational Fluid Dynamics



## Collaborative 3D Design



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Tel: +44 (0)1844 275500 Fax: +44(0)1844 274002 E-mail: [info@ifccertification.com](mailto:info@ifccertification.com) Web: [www.ifccertification.com](http://www.ifccertification.com)  
Registered No: 4777898 England

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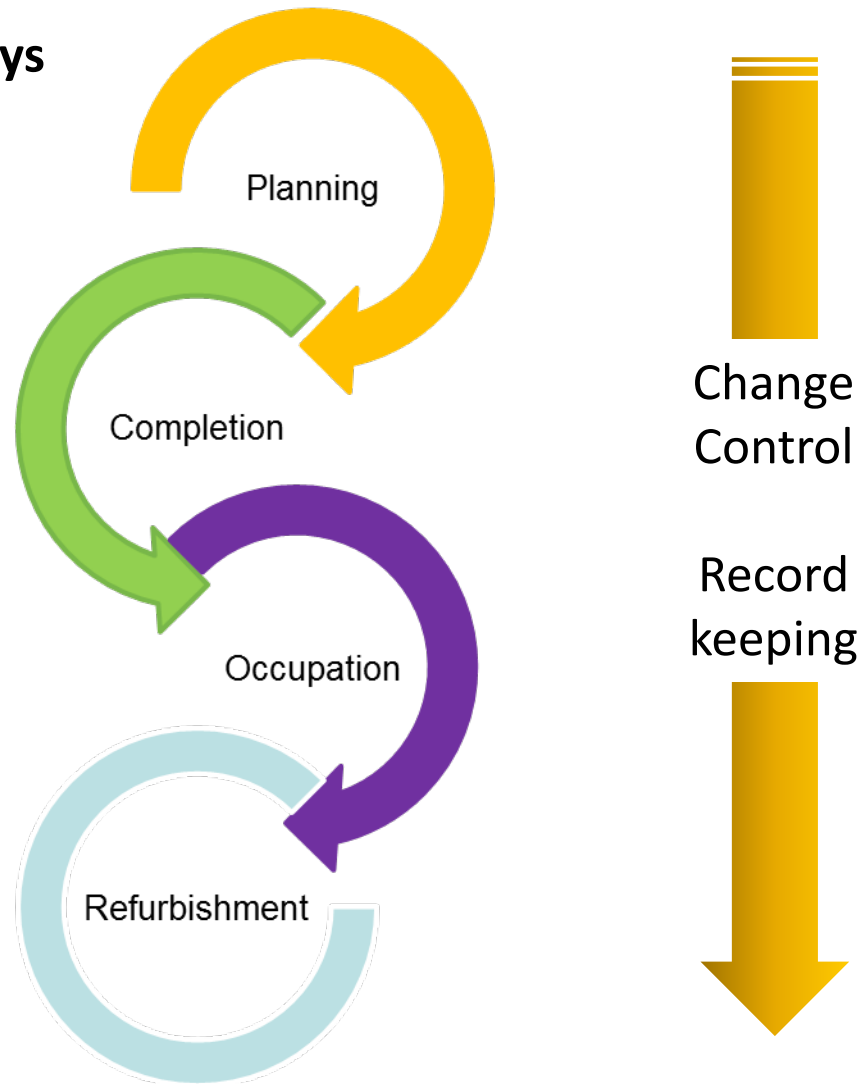
## 3<sup>rd</sup> Party Certification



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## Golden Thread – Gateways



## Commissioning Process:

1. Complete installation

2. Check for conformity to design

3. Electrical installation checks

- Continuity/Impedance
- Insulation
- Resistance
- Network

4. Electrical Performance Tests (fans):

- Test incoming voltage to MCC Panel from Primary and secondary supplies



- Record resistance and current across phases

- Rotational check – speed and direction where required

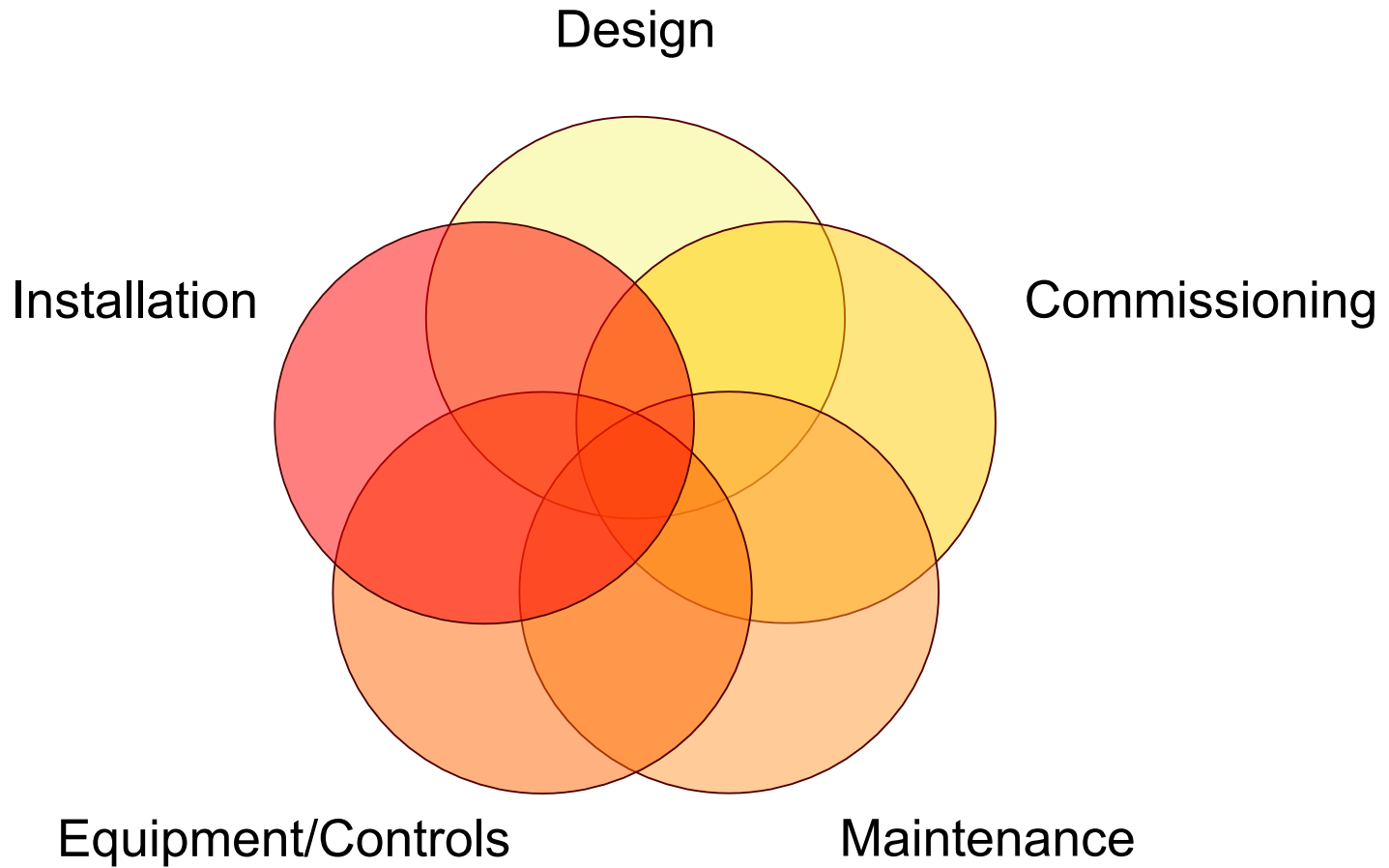
5. Cause and Effect Testing

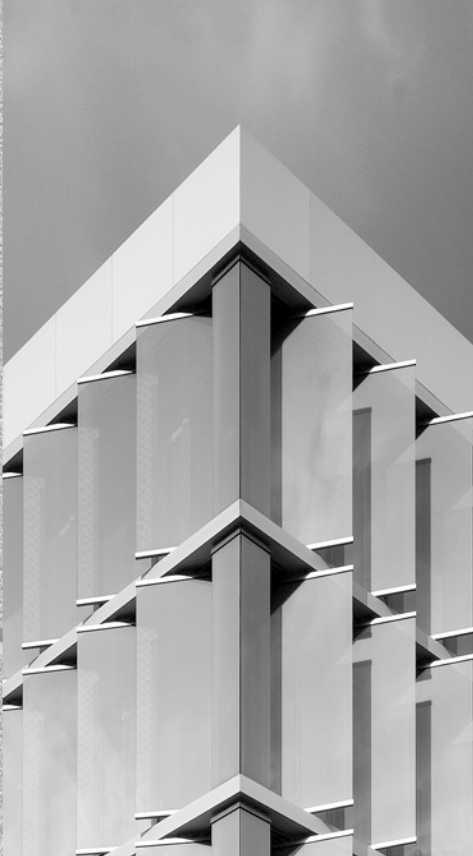
- Primary / secondary fan switchover
- Primary / secondary supply switchover – Integrated building tests

7. Test and prove compliance with design

8. Smoke Test - where specifically required







# Q&A Session...

**COLT**

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