

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





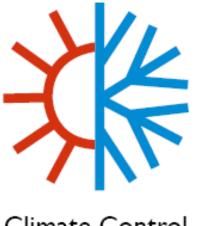
















Smoke Control

Climate Control

Louvre & Shading

Service





Smoke Control



SHEVS Smoke and Heat Exhaust Systems Car Park Ventilation Smoke Containment Pressurisation Systems

Smoke Shaft Systems







Natural Ventilation Mechanical Ventilation / HVAC Evaporative Cooling

Industrial Heating



Performance & Screening Louvre

Colt International Limited















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





Legislation, Standards and Guidance





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 3.8m³/hr/m² 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:

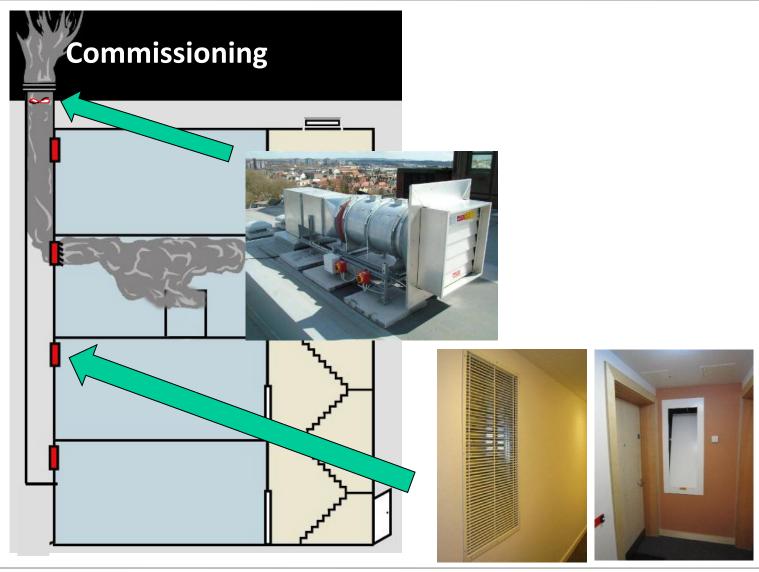
- CE Marked EN 12101-2
- Correct control method
- Known ventilation performance



Commissioning - Process

Commissioning and maintenance of smoke control systems 2019







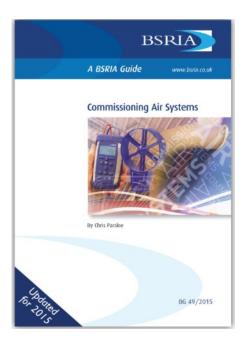
Commissioning - Process

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



Commissioning - Process

Commissioning and maintenance of smoke control systems 2019



6. Cause and Effect Testing

- Primary / secondary fan switchover
- Primary / secondary supply switchover Black Building

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Commissioning - Process

Commissioning and maintenance of smoke control systems 2019



7. Smoke Test - where specifically required





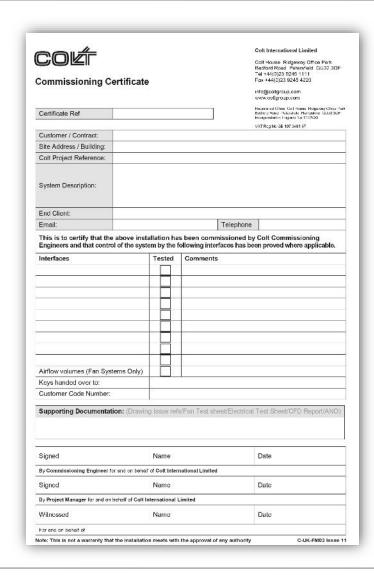


Client demonstration and training

- 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 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 & Cabling

Commissioning and maintenance of smoke control systems 2019



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

BS 9991
BS 9999
SCA Guide
BS 7346-8
Documentation

Smoke Control in Multi-Storey Buildings



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























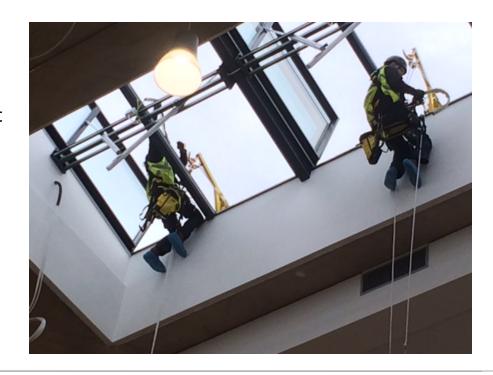
Commissioning and maintenance of smoke control systems 2019



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



Commissioning and maintenance of smoke control systems 2019







Commissioning and maintenance of smoke control systems 2019





Commissioning and maintenance of smoke control systems 2019



Designing for maintenance

Removable access

Cable entry

Lifting lugs and support frame for ease of replacement



Access walkway



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 3QF 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

The systems the verification/inspection of fire strategy verification, system design and installation of snoke a fire protection cutatins / snoke control systems, the assessment and verification of the Quality Control system, correpctory assessment of individuals (as lated in the company's client section of the IFCC website) and continuing surveillance



nitial Certification: 27 September 20: Valid to: 26 September 20:23 Issue status: 1

Ian Woodhouse Director of Certification

IFC Certification Ltd., 20 Park Street, Princet Ribbonough, Suckinghumbhre, HP27 9AH, UK Tul: +44 (0)3844 275500 Fare +44(0)3844 274002 E-mail: <u>infollitoarthisators.com</u> Webs. <u>novel.foarthisators.com</u>

Registered Not 477856 England

The certificate and schedule are held in force by regular annual surveillance visits by IFC Certification. The reader should contact I Certification to while the internal property of IFC Certification and several heavy property of IFC Certification.

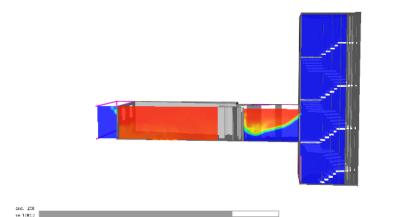
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Competency

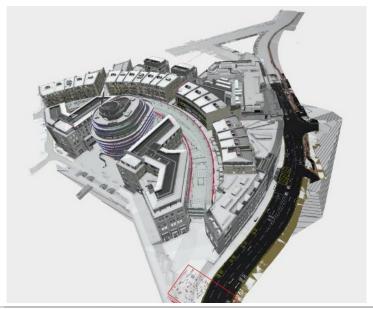
Commissioning and maintenance of smoke control systems 2019







Computational Fluid Dynamics



Collaborative 3D Design



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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

Jan Morthwise
Ian Woodhouse

Director of Certification

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3rd Party Certification





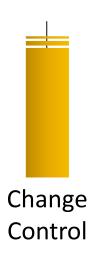
Golden Thread – Gateways Planning Change Completion Control Record keeping Occupation Refurbishment





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



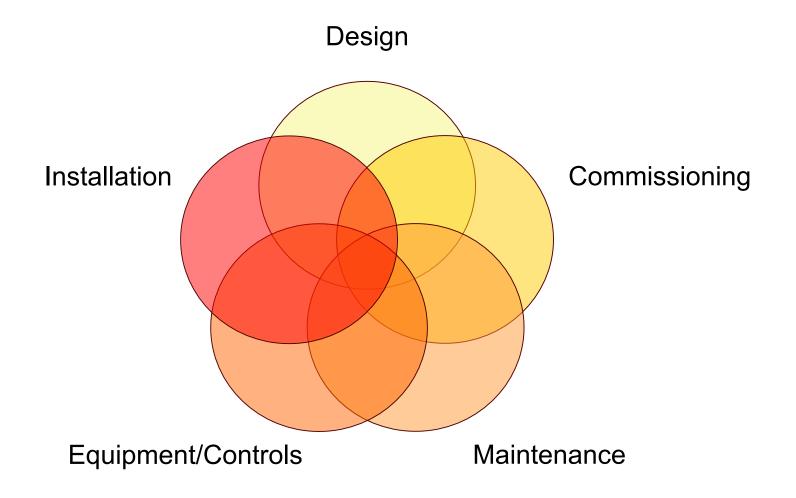
Record

keeping

- 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...

