

PROPRIETARY ITEM: SMOKESHIELD – S
AUTOMATIC OVERHEAD PERIMETER TYPE FABRIC SMOKE CURTAIN

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Fire alarm or smoke detector-activated, overhead coiling fabric smoke curtain.
 2. Self-closing without auxiliary power.
 3. For small and medium protected openings.
- B. Related Requirements:
1. Access Panels.
 2. Load Bearing Header Framing
 3. Finish: Powder coating of specified components.
 4. Detection and Alarm: Provision of fire alarm.
 5. Site Electrical: Provision of 240VAC, 10Amp General purpose outlets (GPO's)
 6. Product Electrical: System connection including cable glands, junction boxes, conductors, wiring devices, and backup power.

1.02 REFERENCES

- A. New Zealand Building Regulations and Fire Engineers Report:
1. Schedule 1 - NZ Building Regulations 1992
 2. Fire Engineers Report Y; Version XX, Dated;
- B. Standards:
1. NZS 4512:2010 – Fire Detection and Alarm Systems in Buildings
 2. EN12101.1 – Smoke and heat control systems. Specification for smoke barriers.
 3. AS/NZS 3837– Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter
 4. AS6905.1 – Smoke Doors
 5. CE Mark

1.03 SUSTAINABLE DESIGN REQUIREMENTS

- A. ESD: Comply with sustainable design requirements including, without limitation, submittal and documentation requirements.
- B. Credit/Point Goals Applicable To This Section: In addition to global project credit/point goals:
1. Materials & Resources - construction waste management
 2. Materials & Resources - recycled content
 3. Materials & Resources - regional materials
 4. Indoor Environmental Quality - construction IAQ management plan

1.04 SUBMITTALS

- A. Comply with Submittal Procedures:
 - 1. Evidence of Suitability – submit full scale smoke curtain test report and Formal Opinion clearly identifying maximum Smoke Performance Level and maximum allowable sizes.
 - 2. Manufacturers Product data
 - 3. Shop drawings:
 - a. Curtain location and unique identification number
 - b. Include opening dimensions
 - c. Show and identify related work performed under other sections of the specifications including access and electrical requirements
 - 4. Quality Assurance/Control Submittals:
 - a. Site Inspection and Test Plan.
 - b. Manufacturers ISO 9001 Certificate of Accreditation

1.05 CLOSEOUT SUBMITTALS

- A. Comply with Project Closeout:
 - 1. Certificate of Compliance with reference to Fire Engineers Report and Evidence of Suitability.
 - 2. Operation and maintenance manual.
 - 3. Manufacturer’s warranty.

1.06 QUALITY ASSURANCE

- A. Certifications:
 - 1. EN12101.1 full scale test on a complete assembly in a lightweight plasterboard partition
 - 2. NZ Building Code Clause C1 – C7 when tested to AS3837
 - 3. Laboratory cycle tested on a 3m x 3m complete assembly
- B. Pre-Installation Meeting:
 - 1. Schedule and convene a pre-installation meeting prior to commencement of field operations with representatives of the following in attendance: Owner, Architect, General Contractor, smoke curtain sub-contractor, mechanical sub-contractor, electrical sub-contractor, and ceiling/fitout sub-contractor
 - 2. Review substrate conditions, requirements of related work, installation instructions, storage and handling procedures, and protection measures.
 - 3. Document the responsibilities of various parties and deviations from specifications and installation instructions.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with project delivery, storage, and handling requirements.
- B. Comply with manufacturer’s instructions.

1.08 WARRANTY

- A. Provide manufacturer's standard one year warranty for Defect Liability Period.
- B. Provide manufacturer's standard 5 year product and installation warranty in conjunction with a Smoke Control's standard 5 + 5 year maintenance contract
- C. Maintenance and Testing:
 - 1. Perform minimum quarterly maintenance and testing on each smoke curtain as required by the manufacturer's warranty, AS1851 - Maintenance, and as required by the Fire Engineers Report.
 - 2. Provide Commissioning documentation including Project name, project address, location and curtain number, number of cycles tested, observations, comments (eg: curtain out of alignment), notes (eg: curtain alignment repaired), Pass/fail.
 - 3. Re-certification after the defect liability period

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

- A. Proprietary item; Model Smokeshield - S automatic smoke curtain.
- B. Manufacturer:
 - 1. **Smoke Control NZ Ltd**, 369 Queen Street, Auckland, 1010, New Zealand
www.smokecontrol.co.nz
- C. Label each smoke curtain with following information:
 - 1. Manufacturer's name and contact details.
 - 2. Curtain location and unique identification number
 - 3. Smoke Performance Level
 - 4. Date of installation

2.02 DESIGN CRITERIA

- A. Maximum allowable size; Unlimited length x 6000 mm drop
- B. Head box; 125 H x 490 W mm
- C. Side guide; 275 mm x 115mm (nominal, refer manufacturer's drawings).

See manufacturer's literature for head box and side guide mounting options.

- D. Fabric type; 660g/m² stainless steel woven fabric, incorporating a coated glassfibre material to reduce radiant heat transmission.
- E. Motor type; Gravigen 240V tubular motor with mechanical upper and lower limit settings
- F. Bottom bar; 300 mm wide (at the base) sheet metal pan type section, requiring a 310mm min. slot in the ceiling lining.
- G. Accessories;
 - a. Curtain mounted re-wind switch

- b. Flush ceiling mounted radial obstruction sensors spaced as required
 - c. Strobes and sounders
 - d. Bottom bar cover
- H. Finishes; Dulux Duralloy colour range (Standard)
- I. Load requirements at head = 25kg/m of width
- J. Load requirements at sides (only if side guide required) = 20kg/m of height
- K. Mounting orientation
- 1. Installation Configuration: Housing attached directly or suspended from substrate above opening
 - 3. Fabricate and install mounting brackets, hardware, and fasteners needed to attach smoke curtain assembly to building structure.
- L. Signage on curtain (standard stencils)
- 1. Green running man (350 x 350mm)
 - 2. Arrows (350 x 190mm high)
 - 3. Fire Safety Curtain (150mm high x 1500mm long)
 - 4. Push Button (100mm high)

2.03 PERFORMANCE CRITERIA

- 1. Smoke Performance Level (SPL): DH120
- 2. Smoke leakage: $\leq 25\text{m}^3/\text{hour}$ (fabric)
- 3. Group Number for fabric: 1 when tested in accordance with AS3837
- 4. Durability; medium duty – tested to 2,000 maintenance free cycles
- 5. Maximum pressure; $\Delta 40\text{Pa}$
- 6. Maximum allowable gap to non-combustible sill 25mm
- 7. Combustible floor coverings permitted at threshold (conditions apply)
- 8. Closing time of 100 - 200mm/sec
- 9. Time delay to required (exhaust/pressurization) fan speed = 60 seconds (min) – 90 seconds (max). Time is dependent on drop height of curtain.
- 10. Time delay for rewind; ensure fan speed is zero + 20 seconds prior to reset of alarm signal from FIP enabling curtain rewind.
- 11. Fail safe close on loss of power and/or signal trip using battery backup.
- 12. Motor rewind automatically on re-set of power and alarm signal, no service call needed.
- 13. Battery backup to reduce nuisance deploys required.
- 14. Commissioning shall be conducted in conjunction with Mechanical services and detection/alarm system. Systems shall be balanced to work together without over pressurizing the smoke curtain.
- 15. Maintenance shall be conducted quarterly by the Manufacturer and/or their nominated representative to the Manufacturers recommendations.

2.04 COMPONENTS

- A. Curtain Fabric: Ecotex 1100 - Glass fibre material with stainless steel wire reinforcement, coated on a single side with polyurethane.
- B. Side Guide Assembly: 2.0mm thick Zincalume mild steel incorporating pneumatic operated moving parts.
- C. Housing Type: 2.0mm thick galvanized mild steel head box incorporating motor brackets, and drive system
- D. Drive system: Drive shaft system forming a single continuous drive unit once installed. Powered by 240V motors and 240V motor controllers. All concealed within the head box structure.

- E. Bottom Bar: 1.6mm thick galvanized mild steel pan section
- F. Gravigen™ Rewind Motor
 - 1. Tubular motor with fail safe gravity deploy operation.
 - 2. Mechanical upper and lower limit settings
 - 3. 240 VDC.
- G. RZ-8 Master control with AM-E slave control set
 - 1. Battery backup
 - 2. 240 VAC power
 - 3. Normally closed 0 Volt alarm signal

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates upon which work will be installed.
 - 1. Verify related work performed under other sections is complete and in accordance with shop drawings.
 - 2. Verify wall surfaces are acceptable for installation of smoke curtain system components
 - 3. Verify setout point locations.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Coordinate electrical interface and connection with Electrical sub-contractor.
- D. Coordinate fire and alarm interface with fire sub-contractor.
- E. Commencement of work by installer is acceptance of substrate.

3.02 INSTALLATION

- A. Install DH120 smoke baffle in accordance with manufacturer's instructions. Service penetrations are to be smoke sealed in accordance with manufacturer's instructions.
- B. Install smoke curtain system components in accordance with smoke curtain approvals and manufacturer's installation instructions.
- C. For reliability, corners are to be folded to continue the concertina action of the system. Flat fabric that bunches on rewind will ultimately cause operational issues and affect overall reliability of the system.
- D. While some Registered Testing Authorities provide Formal Opinions in regards to the expected smoke performance level of smoke curtains, they do not discuss nor provide a warranty in regards to their reliability. Experience shows that some manufacturer designs of smoke curtains do not operate reliably once installed and attract extraordinarily high maintenance costs. For this reason multiple barrel, overlapped smoke curtains are deemed not equivalent to this specification on this project and shall not be substituted for a single barrel continuous span system.
- E. Once installed it shall be demonstrated that the system shall gravity fail safe close on the receipt of an alarm signal or loss of power without the need of battery backup. On reset of power and the alarm signal the system shall automatically rewind to its standby position.

3.03 FIELD QUALITY CONTROL

- A. Field Test 1: Calibration

Follow manufacturer's cycle test procedures prior to application of mechanical services.

1. Conduct a minimum of 10 consecutive, error free cycle tests
2. Complete Inspection and Test Plan

B. Field Test 2: Balancing test

Test operation on general alarm in conjunction with mechanical services

1. Adjust fan speed and activation timing to ensure pressure does not exceed $\Delta 25\text{Pa}$ across smoke curtain and to minimize gaps at the sill.

C. Field Test 3: Commissioning

Test operation on general alarm (or zone alarm as required by Fire Engineers Report) by activating an adjacent smoke detector

1. Notify Owner's Representative, local Fire Services and alarm sub-contractor minimum one week in advance of scheduled testing.
2. Complete Commissioning submittals.

END OF SECTION

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