VESDA-E VEU DETECTION PERFORMANCE (TELCO ENVIRONMENT) CASE STUDY

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Preface

Case study illustrates VESDA-E VEU detection performance to smouldering type smoke tests in a Telco environment with moderately high airflow. The VEU pipe network provided same coverage as two already installed VLP detectors.

Related Products

VESDA-E VEU.

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Introduction

Case study illustrates VEU detection performance to smouldering type smoke tests in a Telco environment with moderately high airflow. The VEU pipe network was designed to provide the same coverage as two already installed VLP detectors.

Test Area

The test area consists of two zones (Figure 1).

- Zone 1: 389m^2
- Zone 2: 285m^2

Ceiling height is 3m and ventilation is achieved by means of air handling units (AHU) located at perimeter of rooms. Each zone is protected by one VLP detector.

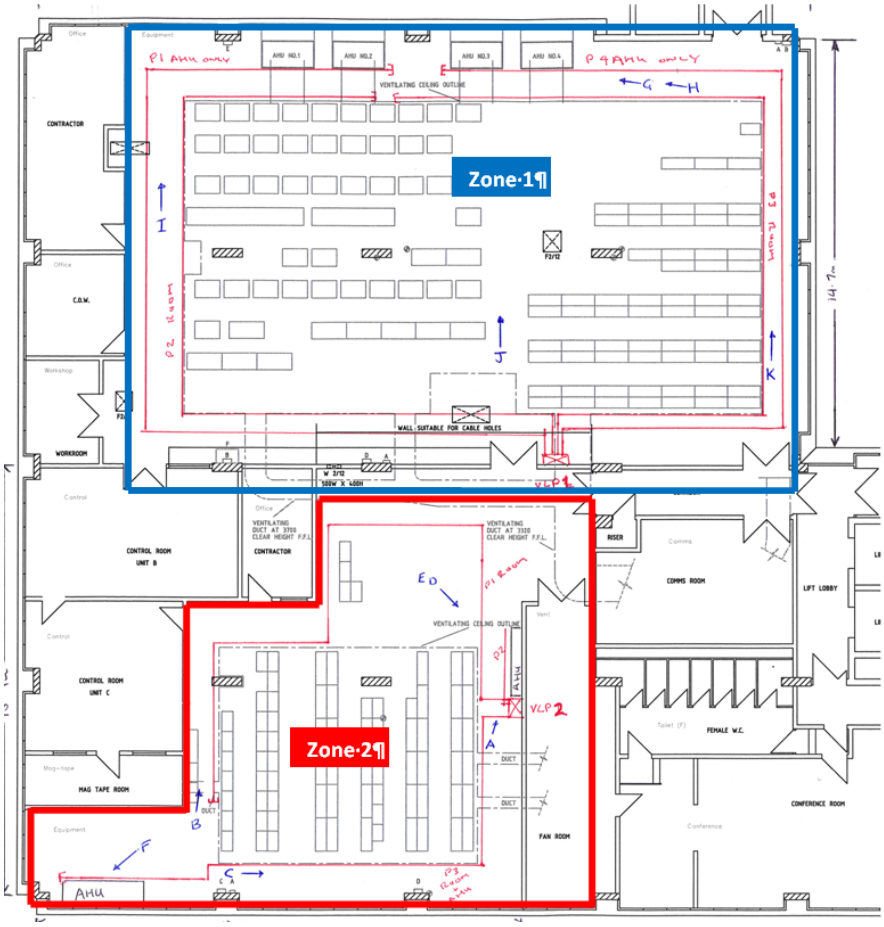

Figure 1: Test Area

Detector Setup

The VEU pipe network was designed to provide the same coverage as two already installed VLP detectors for zones 1, 2 (Figure 2):

- Pipe 1 (Zone 1):
  - AHU: 8 x Ø3mm holes
  - Pressure relief vents: 11 x Ø2.5mm + Ø3mm end vent
- Pipe 2 (Zone 1):
  - Room perimeter: 13 x Ø2.5mm + Ø3.5mm end vent, 3m hole spacing
  - AHU: 8 x Ø3mm holes
  - Pressure relief vents: 11 x Ø2.5mm + Ø3mm end vent
- Pipe 3 (Zone 1): Room perimeter, 12 x Ø2.5mm + Ø3.5mm end vent, 3m hole spacing
- Pipe 4 (Zone 2):
  - Room: 23 x Ø2.5mm + Ø3.5mm end vent, 1m hole spacing
  - AHUs: 28 x Ø2mm holes + Ø3.5mm end vent
  - Room: 17 x Ø2.5mm holes
  - AHUs: 11 x Ø2mm + Ø3.5mm end vent

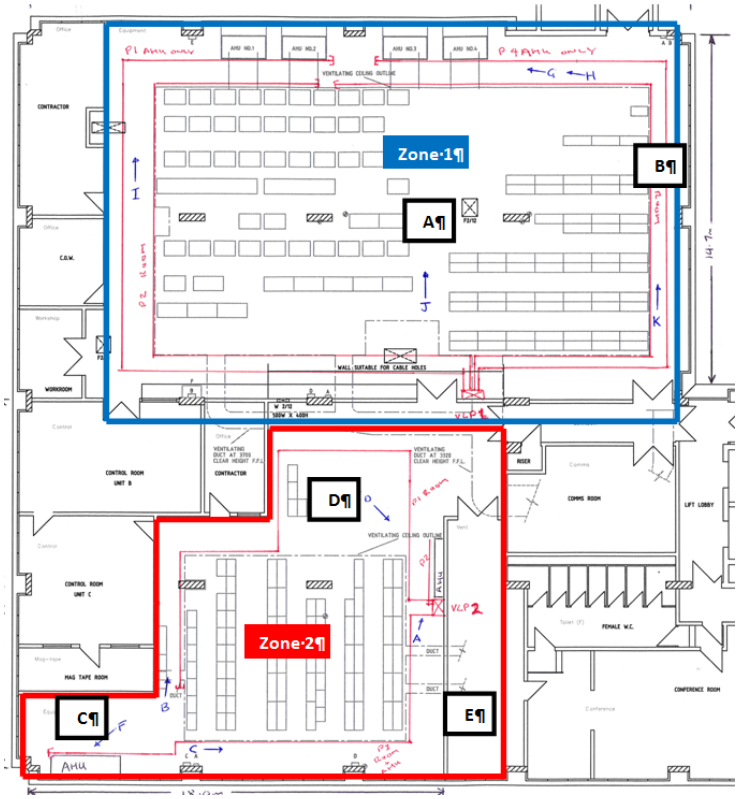

Figure 2: VEU Pipe Network with Smoke Test Locations

VEU aspirator speed was set to 3900rpm and maximum smoke transport times were measured as follows:

Table 1: VEU Maximum Smoke Transport Times

Pipe Layout	VEU
Pipe 1	53
Pipe 2	67
Pipe 3	52
Pipe 4	120

VEU alarm thresholds were set as follows (alarm delay set to 10 seconds):

Table 2: VEU Alarm Thresholds

Alarm Thresholds	VEU
Alert (%/m)	0.005
Action (%/m)	0.01
Fire 1 (%/m)	0.03
Fire 2 (%/m)	0.1

Smoke Test Method

Overheated PVC wire (1m) performance test described in Fire Industry Association “Design, Installation, Commissioning & Maintenance of Aspirating Smoke Detector (ASD) Systems” Code of Practice, 2012, (Appendix E – E.1)

Smoke test locations shown in Figure 2.

Results

The recorded VEU detector response is shown in Table 3.

Table 3: VEU Alarm Response

	Test Location	VEU
A	(Room Center)	Alert
B	(Front of AHU)	Action
C	(Room perimeter close to AHU)	15% above background level
D	(Room Center)	Fire 1
E	(Front of AHU)	Alert

Conclusion

VESDA-E VEU with its ultra-high sensitivity, attributed to FlairTM Detection Technology, proved through this field trial in a Telco environment with moderately high airflow, that it can cover the same area as two already installed VLPs and respond to a smouldering type smoke test (1m overheated PVC coated wire).

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