

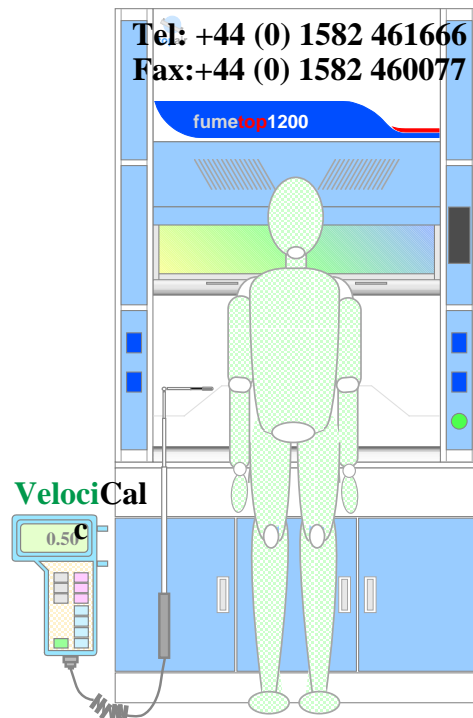
**ASHRAE-110 Type-Test Report for 1.2m Wide Bench-Type  
fumetop1200 FH-120 Fume Hood of TopAir, USA**

***Ref: ANSI/ASHRAE 110-1995***

by

**Dr A F Bicen**

**Invent UK Ltd  
85 Southdown Road  
Harpenden AL5 1PR**



*Tested by: Dr A F Bicen  
Date of Tests: 28th June - 1st July 2011*

## 1. INTRODUCTION

ANSI/ASHRAE 110-1995 type tests carried out for 1.2m wide bench-type fumetop1200 FH-120 fume hood of TopAir, USA are reported. The detailed information on test methods and procedures can be found in reference 1.

## 2. DESCRIPTION OF FUME HOOD

The fume hood tested was 1.2m wide bench-type designed & built by TopAir, USA. The sash opening width was 950mm and the test height 500mm from the bottom cill airfoil. Other geometric details of the hood are shown in Figure 1.

## 3. DESCRIPTION OF TEST ROOM FACILITIES

The test room was at least 7.0m long, 6.0m wide and 4.0m high. The tests facilities include a variable-volume extract air system to adjust the extract volume flow rate to the required value. The make-up air was brought in through the perforated wall/ceiling tiles opposite the tested unit so as to allow a test room pressure in the range of typically -1Pa to -3Pa. The test room differential pressure, temperature, relative humidity and velocity during tests were:

Room differential pressure:	-1Pa
Room air temperature:	25°C - 27°C
Room air relative humidity:	50%
Room air velocity:	much less than 0.1 m/s

## 4. VELOCITY TESTS

Velocity tests were performed with the sash set at 500mm from the bottom cill airfoil. The velocity type-test grid for the test opening is shown in Figure 2 which also shows the velocity test results.

## 5. FLOW VISUALISATION TESTS

### 5.1 Local Visualisation (Low Volume Smoke) Tests

The following observations were made:

Along the opening edge = GOOD

Top LHS corner = GOOD

Top RHS corner = GOOD

Bottom LHS corner = GOOD

Bottom RHS corner = GOOD

### 5.2 Large Volume Smoke Test

The entry flow to the hood is good. The internal smoke clears within less than 30 sec.

## 6. CONTAINMENT TESTS

### 6.1 Static Sash Tests

The containment tests were performed for the same opening as in the velocity tests. Figure 3 shows the positioning of the containment test system with respect to the test opening. Figure 3 also summarises the containment results and show that the fume hood containment performance is very good.

### 6.2 Probe Traversing Tests at Static Sash Openings

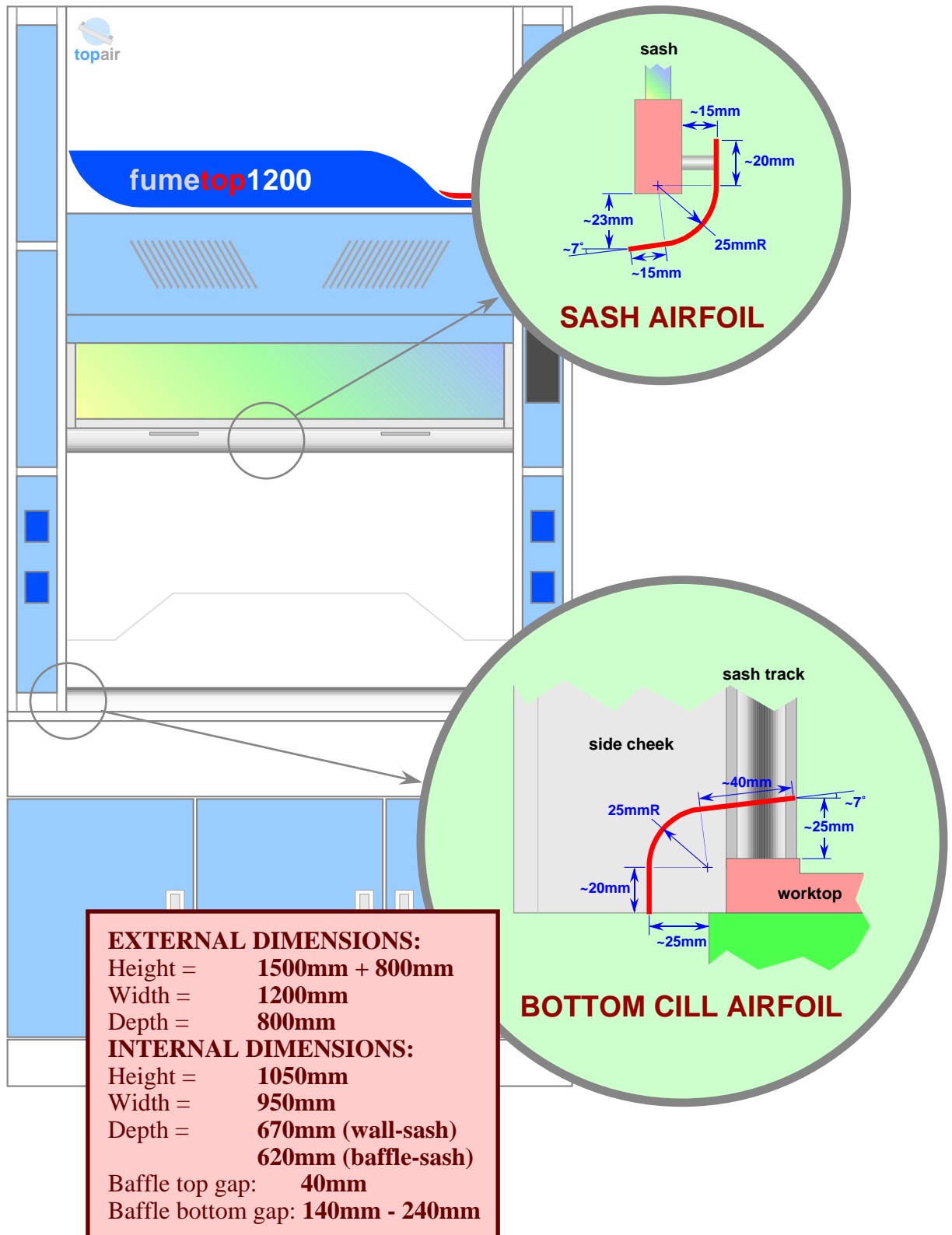
Traversing of the sampling probe along the edges of the test opening resulted in SF6 levels less than 0.010ppm.

**REFERENCES**

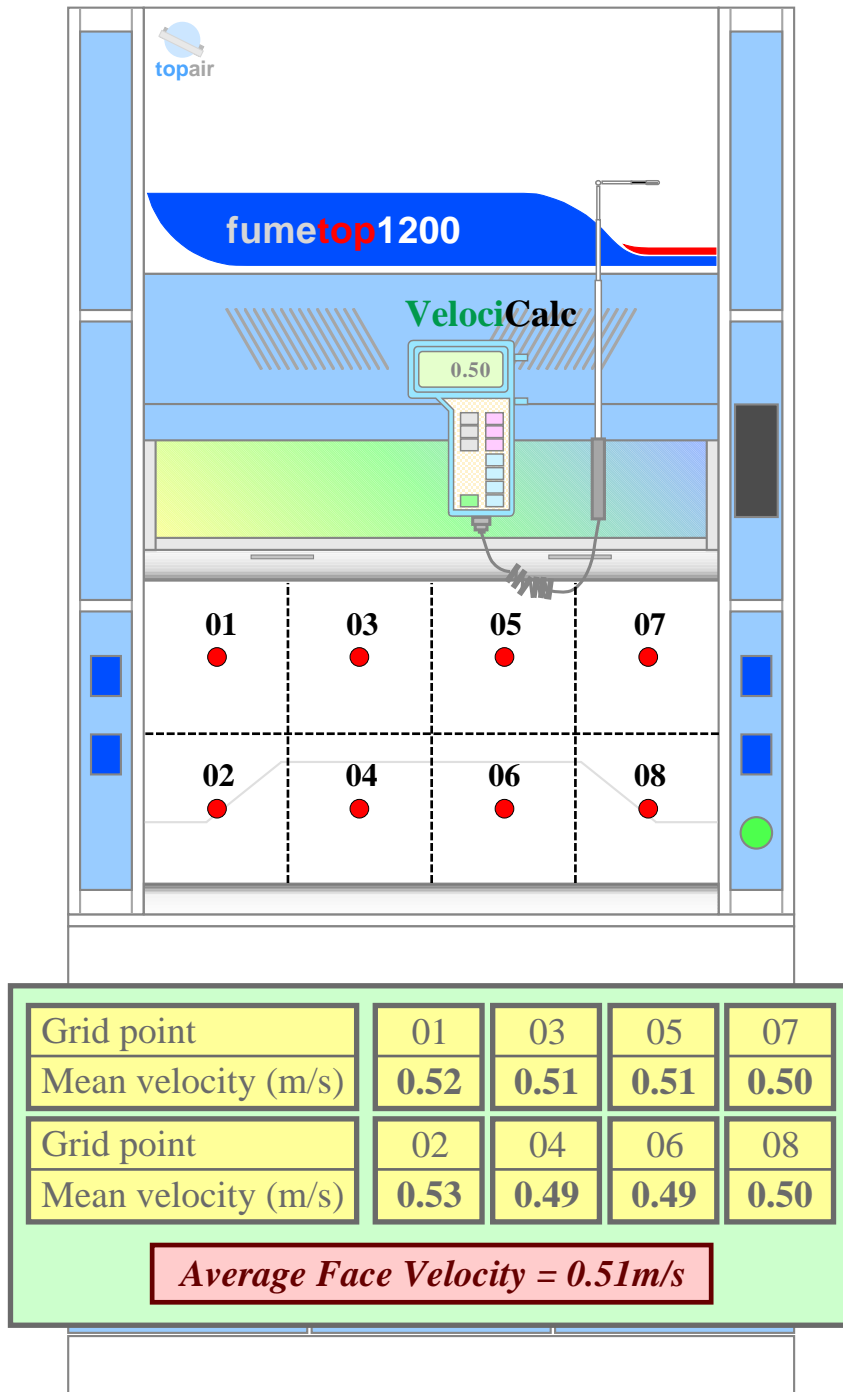
1. **ANSI/ASHRAE 110-1995**, *ASHRAE Guideline, Method of Testing Performance of Laboratory Fume Hoods*, 1995.

**List of instrumentation used during tests:**

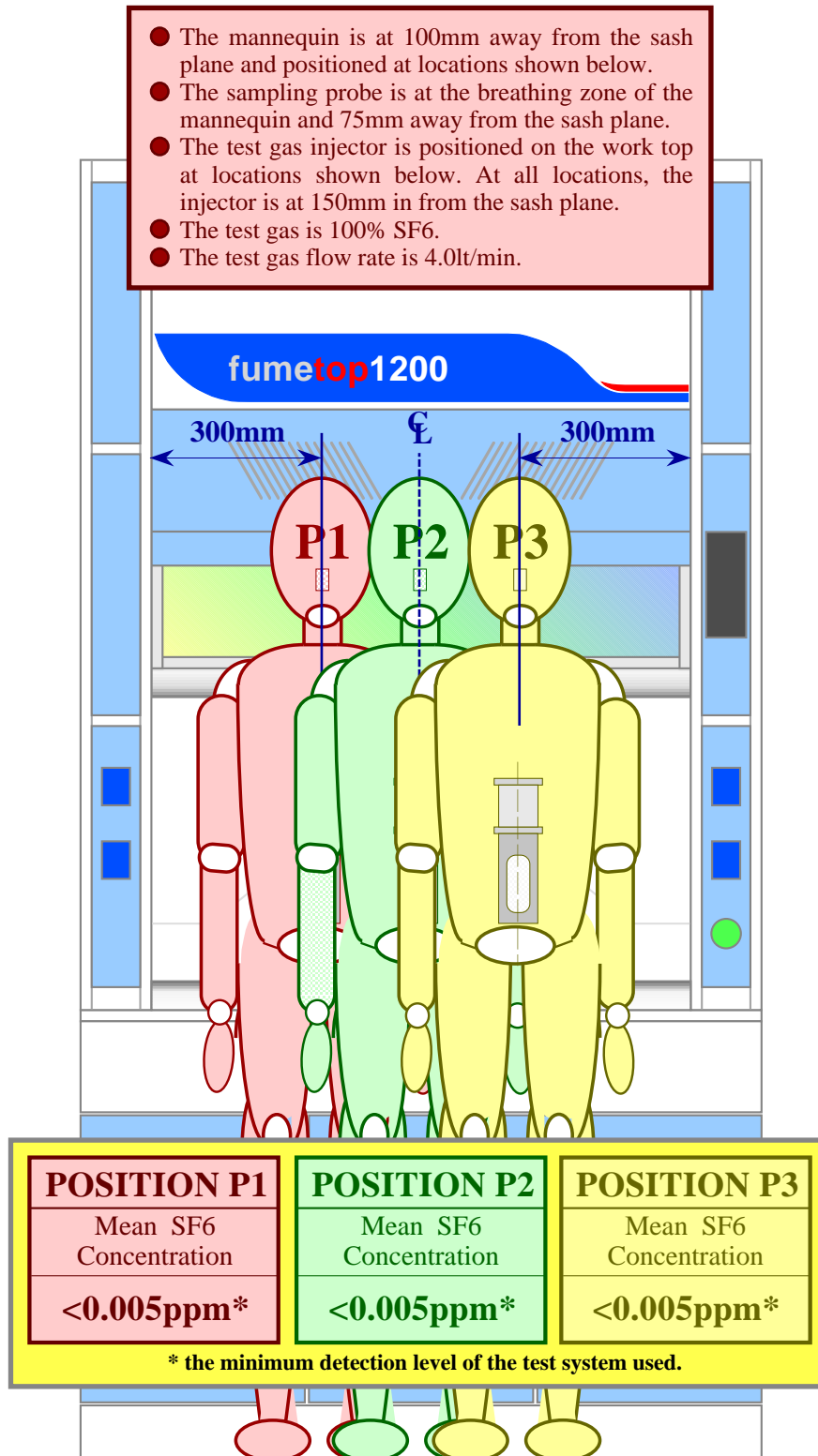
1. Miran 203 infrared gas analyser - SN: 8278 (*containment tests*)
2. VelociCalc 9545-A - SN: 0713014 (*velocity tests*)
3. Drager Flow Check tracer smoke generator (*smoke visualisation*)



**Figure 1** Geometric features of 1.2m wide bench-type fumetop1200 FH-120 fume hood of TopAir.



**Figure 2** Velocity type-test grid and results.



**Figure 3** Positioning of ASHRAE containment test system and results.

## CERTIFICATE OF TYPE TESTING IN ACCORDANCE WITH ASHRAE 110-1995

CERTIFICATE & REPORT NO: INV/ASHRAE110/555-A  
ISSUE DATE: 23rd April 2013

**Fume Hood Type:**

fumetop1200

**FH-120 bench type**

*External Dimensions:*

Height = 2300mm  
(1500mm + 800mm)

Width = 1200mm

Depth = 800mm

*Internal Dimensions:*

Height = 1050mm

Width = 950mm

Depth = 670mm (wall-sash)  
620mm (baffle-sash)

*Baffle Gap Dimensions:*

Top gap: 40mm

Bottom gap: 140mm - 240mm

**Fume Hood Manufacturer:**

**TopAir USA**

**3182 Monterey Drive**

**Merrick**

**NY 11566**

**USA**



**Fume Hood Flow:**

**Test opening width: 950mm**

**Test opening height: 500mm**

**Face velocity: 0.51m/s**

This is to certify that the fume hood described above has been type-tested in accordance with ASHRAE 110-1995 and resulted in performance characteristics given in the corresponding test report.

**Tested and Certified by:** Dr A F Bicen

Invent UK Ltd, 85 Southdown Road, Harpenden, Herts AL5 1PR

Tel: 01582 461666 : Fax: 01582 460077 : E-mail: info@invent-uk.com

A handwritten signature in blue ink that reads 'A.F. Bicen'.