

ACE ELECTRIC LAB. SYSTEMS

1550 S. Kingshighway, St. Louis, MO 63110
Phone (314) 771-7272 Fax (314) 771-6956

On August 23, 2017 ACE performed an Ashrae 110 Fume Hood Test on a Jamestown Fume Hood. The unit being tested was Serial Number 6-170823-1 located at Webster University Lab 478, Interdisciplinary Science Building.

The test was conducted as described in the Ashrae 110 Standard "Method of Testing Performance of Laboratory Fume Hoods". It is being tested as installed.

Velocity readings were measured as described in the Ashrae 110 Standard with an average velocity of 88.5 fpm with the lab door closed. This was measured with the sash at 18"H and 38" W.

Flow visualization (smoke test) is a test to visualize the hood's ability to contain vapors. The test consists of both a small local challenge and a gross challenge to the hood. The intent of this test is to render an observation of the hood's performance as it is typically used.

On the small local challenge with the sash open to 18"H, the center release has a smooth inflow with some turbulence caused by the air being pulled down the front of the sash. When the release was at the work surface, the smoke showed some reverse flow and turbulence at the lip of the dished work surface. The smoke does not travel past the lip back towards the opening. When tested with the sash closed, a release at the top the smoke travels above the sash through the bypass also a release under the airfoil flowed towards the rear. Tests with no escape.

On the large challenge with the sash open to 18 "H, the smoke flows inward and slightly upward with some turbulence and some smoke getting caught in a rolling action in the top of the hood turning back at the opening. A release at the work surface showed a slight reverse flow and some slight turbulence at the lip of the dished work surface. The smoke does not travel past the lip back towards the opening. Tests with no escape.

The tracer gas test was performed on the unit as described in the Ashrae 110 Standard.

The SF-6 containment test was first performed with the sash at 18"H, with the SF-6 release chamber and mannequin on the left side showing good containment for vertical sash opening. The SF-6 containment test was then performed with the SF-6 release chamber and the mannequin in the center and had good containment for vertical sash opening. The SF6 containment test was performed with the mannequin and the SF6 release chamber on the right side where it showed good containment.



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Description:

The Unit has a single piece sash . Unit does have an airflow monitor on it.
The exhaust goes out through one panel in the rear of the unit.
The panel is 38"W x 33" H.

Dimensions

Exterior:

48"W

57"H

33"D

Work surface is 36" from the floor

From work surface to the nose of the mannequin = 24"H.

Interior:

38"W

49"H

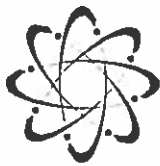
26" from the rear of the air foil to the back of the unit.

23.5" to the rear or the air foil to the front of the panel along the back side of the unit.

Opening size:

18"H x 38"W .

24.5" H x 38" W with sash full open.



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Fume Hood Test Report

6-170823-1

Date Tested
8-23-2017

Institution: Webster University	Certifier: Brian Dyer
Department: N/A	Instrument Manufacturer: Jamestown
Address: 7470 E.Lockwood	Model: F350-48G5
City, State, ZIP: St.Louis MO, 63119	Serial #: 6-170823-1
Contact: Amanda Sutton	Location: Lab 478
Phone Number: (314) 227-0088	

Tests Conducted

- | | |
|--|--|
| ☒ Vertical Opening Left Tracer Gas | ☒ Face Velocity |
| ☒ Vertical Opening Center Tracer Gas | ☒ Smoke Visualization |
| ☒ Vertical Opening Right Tracer Gas | ☒ Sash Movement Effect |
| ☐ Horizontal Opening Left Tracer Gas | ☒ Walk By Test |
| ☐ Horizontal Opening Center Tracer Gas | ☒ Lab Door Open Test |
| ☐ Horizontal Opening Right Tracer Gas | |

Final Testing Results

- ☐ Test Passed
☐ Test Failed

Face Velocites

94.2	94.2	92.0	86.6	82.6					
81.2	89.6	89.8	85.4	89.2					

Average Face Velocity (AFV) **88.5**

Turbulence Intensity (TI) **0.068**

Standard Deviation of Averages (SDA) **4.27**

Standard Deviation

2.3	6.2	3.5	5.4	7.8					
13.4	8.3	4.5	4.1	4.9					

Remarks:

Interdisciplinary Science Building



Face Velocites

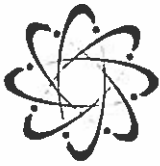
0	0	0	0	0	0	0	0	0	0
AFV	TI	SDA	AFV	TI	SDA	AFV	TI	SDA	

Standard Deviation

Equipment Used

	Make	Model	Serial #	Cal Date
Detector	Foxboro	Miran-1A CVF	1A3388	8/23/2017
VoltMeter	Radio Shack	22-805	A99023395	8/23/2017
Air Velocity Meter:	TSI	8346	971100212	2/1/2017

B. Dyer
 Field Service Engineer



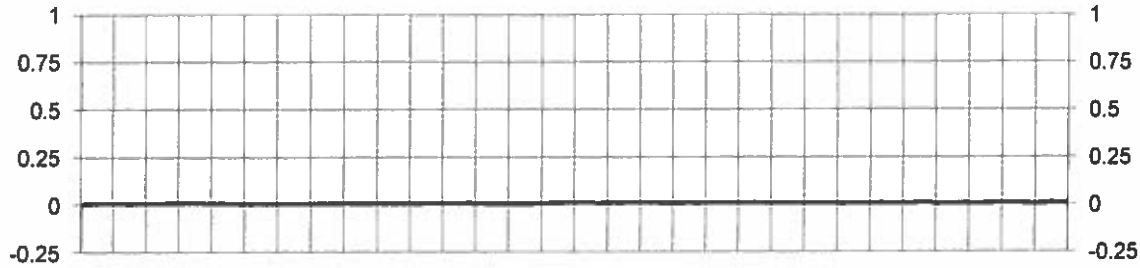
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Fume Hood Test Report

6-170823-1

Date Tested
8-23-2017

Vertical Opening Tracer Gas Test Results (Left Side):

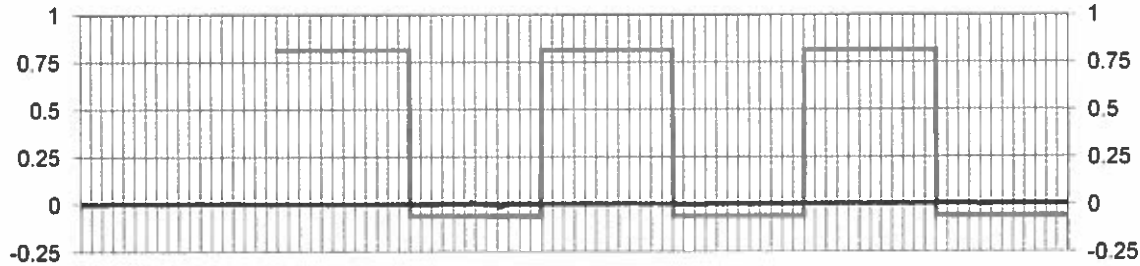


Minimum
.000 ppm

Maximum
.010 ppm

Average
.006 ppm

Vertical Opening Tracer Gas Test Results (Center):

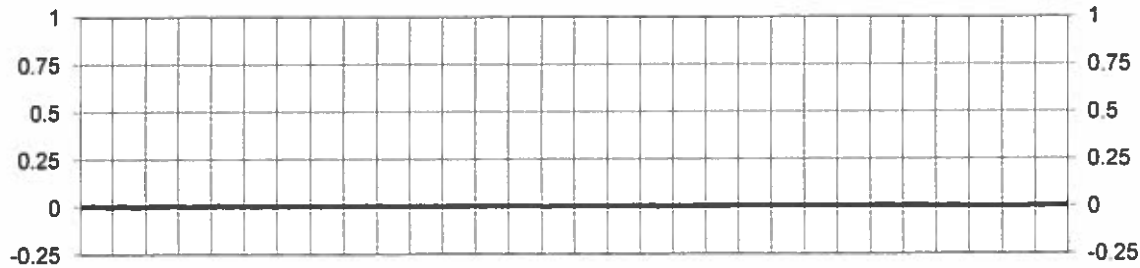


Minimum
-.010 ppm

Maximum
.010 ppm

Average
.001 ppm

Vertical Opening Tracer Gas Test Results (Right Side):

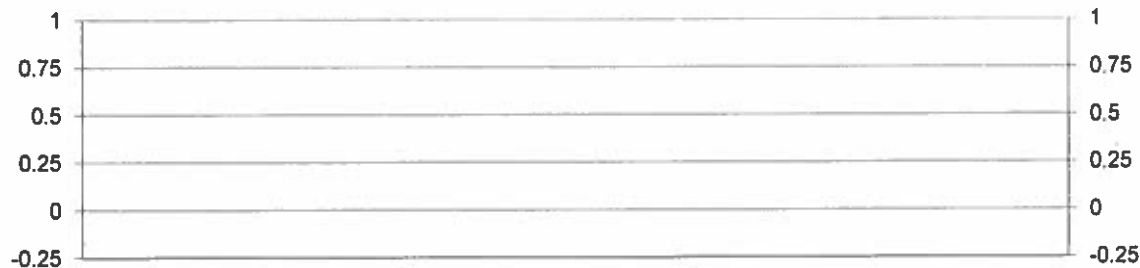


Minimum
-.003 ppm

Maximum
.006 ppm

Average
.001 ppm

Horizontal Opening Tracer Gas Test Results (Left Side):



Minimum
.000 ppm

Maximum
.000 ppm

Average
.000 ppm

* 10 Seconds per Division (X Axis)



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Fume Hood Test Report

6-170823-1

Date Tested
8-23-2017

Horizontal Opening Tracer Gas Test Results (Center):



Minimum

.000 ppm

Maximum

.000 ppm

Average

.000 ppm

Horizontal Opening Tracer Gas Test Results (Right Side):



Minimum

.000 ppm

Maximum

.000 ppm

Average

.000 ppm

* 10 Seconds per Division (X Axis)



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On August 23, 2017 ACE performed an Ashrae 110 Fume Hood Test on a Jamestown Fume Hood. The unit being tested was Serial Number 6-170823-3 located at Webster University Lab 491, Interdisciplinary Science Building.

The test was conducted as described in the Ashrae 110 Standard "Method of Testing Performance of Laboratory Fume Hoods". It is being tested as installed.

Velocity readings were measured as described in the Ashrae 110 Standard with an average velocity of 84.8 fpm with the lab door closed. This was measured with the sash at 18"H and 62" W.

Flow visualization (smoke test) is a test to visualize the hood's ability to contain vapors. The test consists of both a small local challenge and a gross challenge to the hood. The intent of this test is to render an observation of the hood's performance as it is typically used.

On the small local challenge with the sash open to 18"H, the center release has a smooth inflow with some turbulence caused by the air being pulled down the front of the sash. When the release was at the work surface, the smoke showed some reverse flow and turbulence at the lip of the dished work surface. The smoke does not travel past the lip back towards the opening. When tested with the sash closed, a release at the top the smoke travels above the sash through the bypass also a release under the airfoil flowed towards the rear. Tests with no escape.

On the large challenge with the sash open to 18 "H, the smoke flows inward and slightly upward with some turbulence and some smoke getting caught in a rolling action in the top of the hood turning back at the opening. A release at the work surface showed a slight reverse flow and some slight turbulence at the lip of the dished work surface. The smoke does not travel past the lip back towards the opening. Tests with no escape.

The tracer gas test was performed on the unit as described in the Ashrae 110 Standard.

The SF-6 containment test was first performed with the sash at 18"H, with the SF-6 release chamber and mannequin on the left side showing good containment for vertical sash opening. The SF-6 containment test was then performed with the SF-6 release chamber and the mannequin in the center and had good containment for vertical sash opening. The SF6 containment test was performed with the mannequin and the SF6 release chamber on the right side where it showed good containment.



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Description:

The Unit has a single piece sash . Unit does have an airflow monitor on it.
The exhaust goes out through one panel in the rear of the unit.
The panel is 62'W x 33" H.

Dimensions

Exterior:

72"W

57"H

33"D

Work surface is 36" from the floor

From work surface to the nose of the mannequin = 24"H.

Interior:

62"W

49"H

26" from the rear of the air foil to the back of the unit.

23.5" to the rear of the air foil to the front of the panel along the back side of the unit.

Opening size:

18"H x 62"W .

24.5" H x 62" W with sash full open.



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Fume Hood Test Report

6-170823-3

Date Tested
8/23/2017

Institution: Webster University	Certifier: Brian Dyer
Department: N/A	Instrument Manufacturer: Jamestown
Address: 470 E.Lockwood	Model: F350-72G5
City, State, ZIP: St.Louis MO, 63119	Serial #: 6-170823-3
Contact: Amanda Sutton	Location: 4th FI Lab 491
Phone Number: (314) 227-0088	

Tests Conducted

- | | |
|--|--|
| ☒ Vertical Opening Left Tracer Gas | ☒ Face Velocity |
| ☒ Vertical Opening Center Tracer Gas | ☒ Smoke Visualization |
| ☒ Vertical Opening Right Tracer Gas | ☒ Sash Movement Effect |
| ☐ Horizontal Opening Left Tracer Gas | ☒ Walk By Test |
| ☐ Horizontal Opening Center Tracer Gas | ☒ Lab Door Open Test |
| ☐ Horizontal Opening Right Tracer Gas | |

Final Testing Results

- ☐ Test Passed
☐ Test Failed

Face Velocites

89.4	86.6	83.2	87.0	75.0	84.8	84.4			
86.2	83.4	94.6	86.4	84.2	80.6	80.8			

Average Face Velocity (AFV) **84.8**

Turbulence Intensity (TI) **0.081**

Standard Deviation of Averages (SDA) **4.35**

Standard Deviation

3.4	6.2	10.0	4.1	11.5	4.2	1.9			
8.3	5.0	6.5	9.7	10.5	7.1	7.5			

Remarks:

Interdisciplinary Science Building



Face Velocites

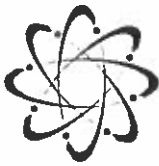
0	0	0	0	0	0	0	0	0	0
AFV	TI	SDA	AFV	TI	SDA	AFV	TI	SDA	

Standard Deviation

Equipment Used

	Make	Model	Serial #	Cal Date
Detector	Foxboro	Miran-1A CVF	1A3388	8/23/2017
VoltMeter	Radio Shack	22-805	A99023395	8/23/2017
Air Velocity Meter:	TSI	8346	97110212	2/1/2017

B. Dyer
 Field Service Engineer



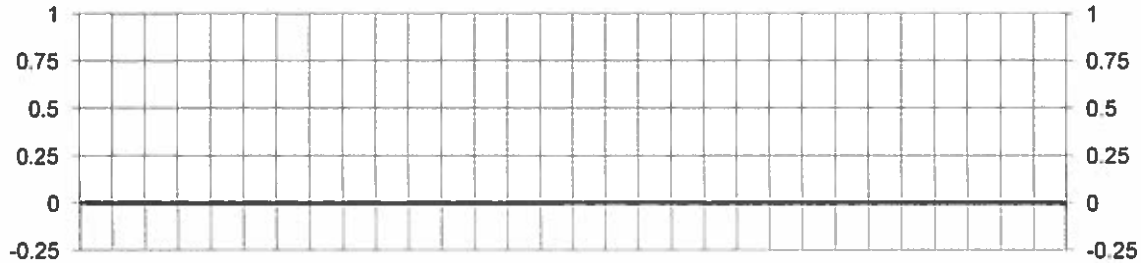
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Fume Hood Test Report

6-170823-3

Date Tested
8/23/2017

Vertical Opening Tracer Gas Test Results (Left Side):

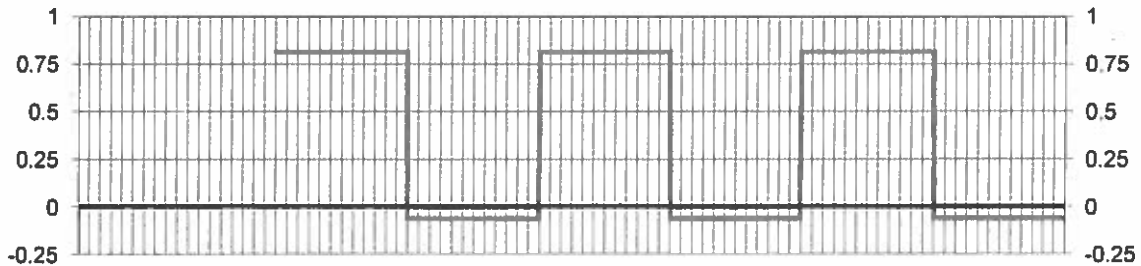


Minimum
-.003 ppm

Maximum
.001 ppm

Average
-.001 ppm

Vertical Opening Tracer Gas Test Results (Center):

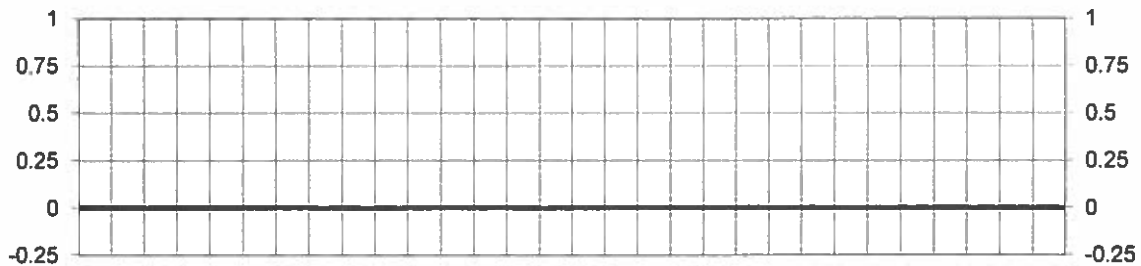


Minimum
-.002 ppm

Maximum
.003 ppm

Average
.000 ppm

Vertical Opening Tracer Gas Test Results (Right Side):



Minimum
-.001 ppm

Maximum
.003 ppm

Average
.001 ppm

Horizontal Opening Tracer Gas Test Results (Left Side):



Minimum
.000 ppm

Maximum
.000 ppm

Average
.000 ppm

* 10 Seconds per Division (X Axis)



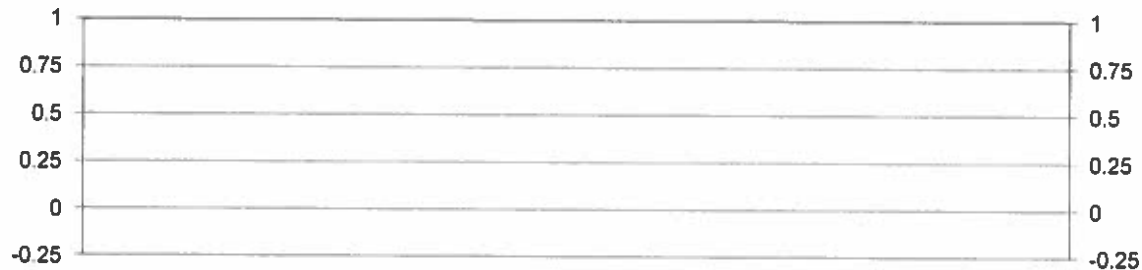
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Fume Hood Test Report

6-170823-3

Date Tested
8/23/2017

Horizontal Opening Tracer Gas Test Results (Center):



Minimum

.000 ppm

Maximum

.000 ppm

Average

.000 ppm

Horizontal Opening Tracer Gas Test Results (Right Side):



Minimum

.000 ppm

Maximum

.000 ppm

Average

.000 ppm

* 10 Seconds per Division (X Axis)

