

ASLI Mechanical SDN. BHD.

Airflow Research And Development Study of Weather Louvre

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DOCUMENT CONTROL FORM

Airflow Research And Development Study of Weather Louvre	
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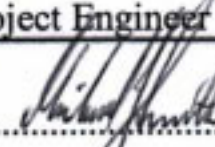
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TABLE OF CONTENTS

DOCUMENT CONTROL FORM	2
1.0 INTRODUCTION	4
2.0 UNITS UNDER TEST	4
3.0 TEST CONDITIONS AND APPLICABLE STANDARDS	4
4.0 TEST SET UP AND PROCEDURE.....	5
5.0 INSTRUMENTATION	8
6.0 ORDERS OF ACCURACY	8
7.0 RESULTS	9

1.0 INTRODUCTION

This report presents the results of airflow development tests carried out on Weather Louvre supplied by ASLI Mechanical SDN BHD, as described below.

2.0 UNIT UNDER TEST

The unit tested is described in Table 1 below.

Table 1 : Description of Unit Under Test

#	Unit Description	Face Size (mm)
1	Weather Louvre	1000 x 1000

3.0 TEST CONDITIONS AND APPLICABLE STANDARDS

Test unit was tested at a range of flow conditions, as shown on the Test Certificate.

The test set up and measurements were taken in general accordance with the following standard:

AMCA "Air Movement and Control Association" (Standard 500-89).
Test Methods for Louvers, Dampers and Shutters

4.0 TEST SET UP AND PROCEDURE

Water penetration tests are conducted with the exterior face of the louver frame flush with the wetted wall.

The environmental test conditions in the chamber varied for each test within the following ranges:

Room Air Temperature	17 degrees C $\pm$ 2.0 degree C
Barometric Pressure	1055 millibar $\pm$ 5 millibar

Airflow rates and velocities were measured using nozzle box and hot wire anemometer. Static pressure drop was recorded using a (Static Pressure) probe and an inclined manometer. Figure 1 shows the test set up. Figures 2 and 3 show photographs of the unit tested.

* Minimum Test Point:

Weight of water carried over $\leq$ 0.01 ounce per square foot of free area

or

Weight of water carried over = 1.00 ounce per determination

* Maximum Test Point (Free Area Velocity):

Between 2.0 and 2.5 ounces weights of water carry-over per square foot of free area

or

Free area velocity = 1250fpm (6.3m/s)

* Test Duration $\geq$ 15min

* Water flow rate on the wetted wall $\geq$ 0.25gpm (16 mL/s)

LEGEND:	1.0 ounce	=	30.0 mL
	1.0 foot	=	304.8 mm

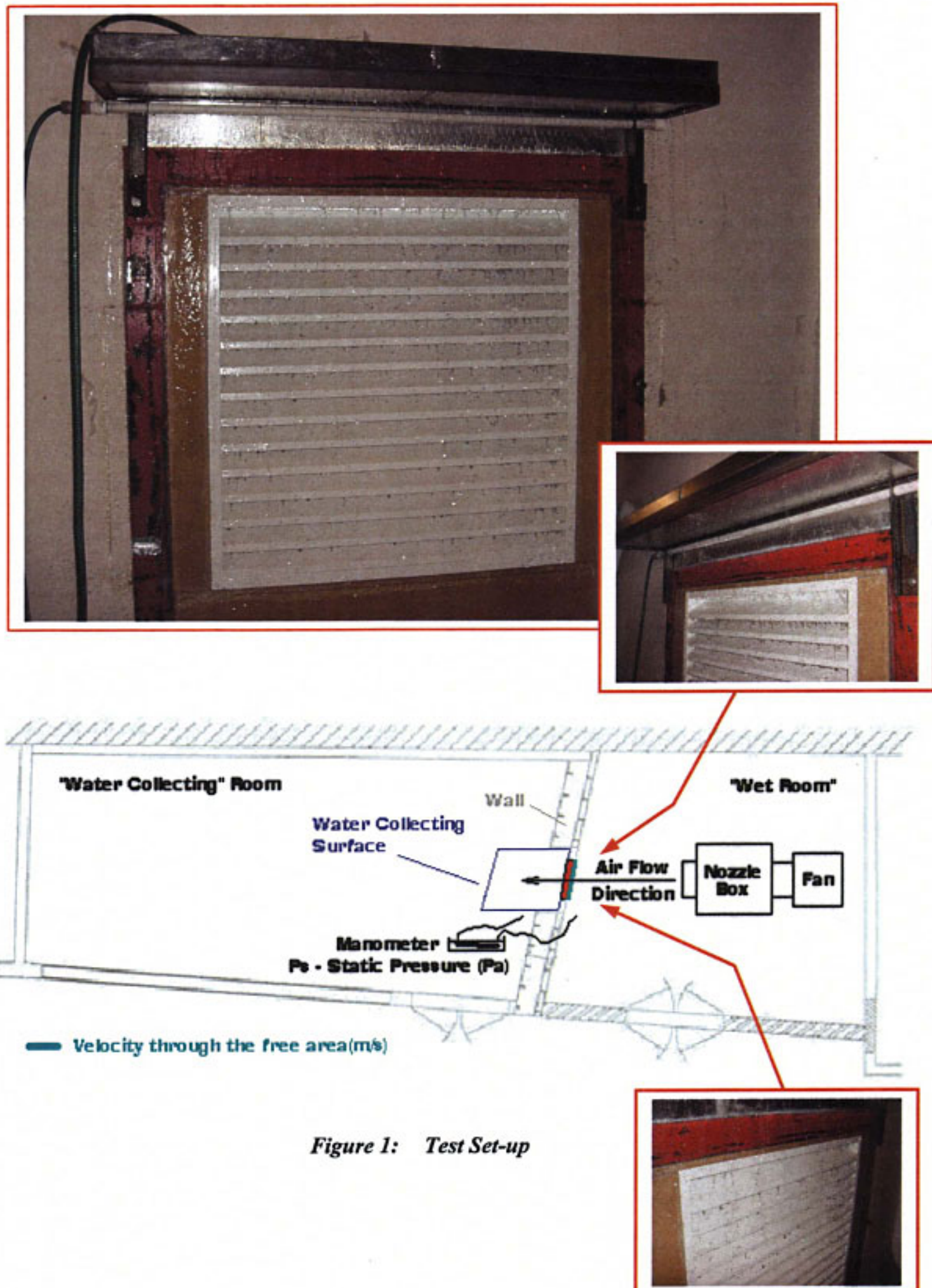




Figure 2: Weather Louvre - Face View



Figure 3: Weather Louvre - Rear View

5.0 INSTRUMENTATION

INSTRUMENT	MAKE & MODEL	CALIBRATION		SERIAL NO.
		BY	DATE	
Manometers (2)	Airflow Developments Type 504	Gas Technology Services	23/03/2005	36862 PM6-168
Nozzle Box	Vipac	Vipac	-	-
Hot Wire Anemometer	TSI 8330	CSIRO	30/03/2005	97110174

6.0 ORDERS OF ACCURACY

Pressure Drop: $\pm 5\%$ or 0.5 Pa whichever is greater

Airflow: $\pm 5\%$ or 10 l/s whichever is greater

7.0 RESULTS

The results obtained are shown in the attached Test Certificate.
Appendix A contains a graphical representation of test results.

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VIPAC ENGINEERS AND SCIENTISTS LTD.


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ZARKO DRINIC
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.....
MICHAEL SMITH
DIRECTOR

TEST CERTIFICATE

AIRFLOW PERFORMANCE TEST OF WEATHER LOUVRE

SUPPLIED BY: ASLI MECHANICAL SDN BHD
TESTED BY: VIPAC ENGINEERS & SCIENTISTS LTD
TEST DATE: June 2006
CLIENT: ASLI MECHANICAL SDN BHD
UNIT: Weather Louvre – Water Test
 Face: 1000 x 1000 mm (Free Area: 0.3822 m²)

TEST CONDITIONS

Q (L/S)	Qv (m3/s)	Ps (Pa)	V (m/s)	Qm (mL/15min)	Qc (L/15min)
573	0.6	12	1.5	15	0.015
841	0.8	15	2.2	55	0.055
1070	1.1	18	2.8	100	0.100
1299	1.3	20	3.4	130	0.130
1682	1.7	24	4.4	205	0.205
2140	2.1	28	5.6	265	0.265
2446	2.4	31	6.4	310	0.310

LEGEND

Q - Air Flow Rate through the free area (L/S)
 Qv - Air Flow Rate (m3/s)
 Ps - Supply Static Pressure (Pa)
 V - Velocity through the free area (m/s)
 Qm - Water carry-over (mL/15min)
 Qc - Water carry-over (L/15min)


 Zarko Drinic
 PROJECT ENGINEER


 Michael Smith
 DIRECTOR

Appendix A

Graphical Representation of Test Results

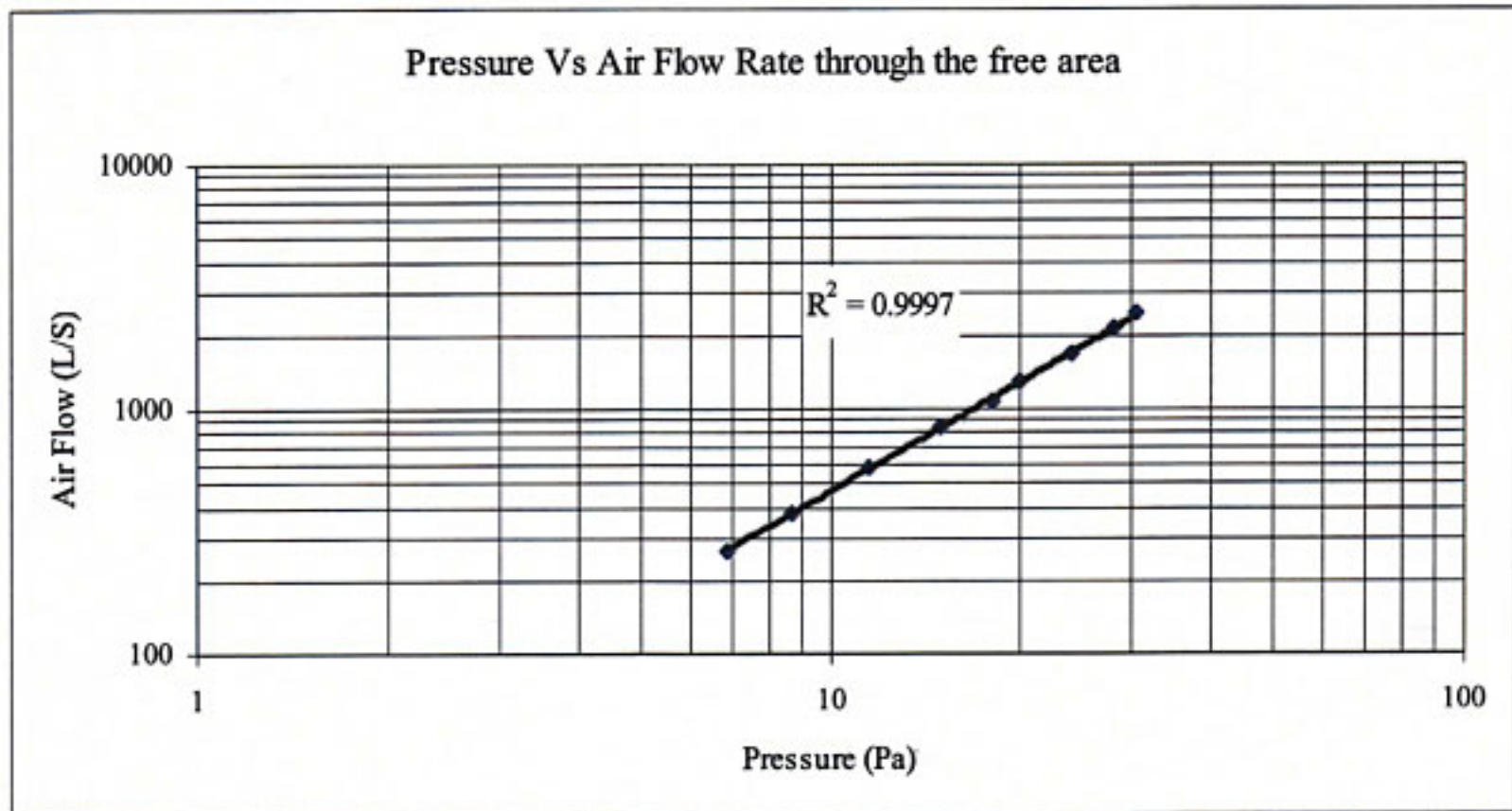


Figure 4: Pressure Vs Air Flow Rate through the free area

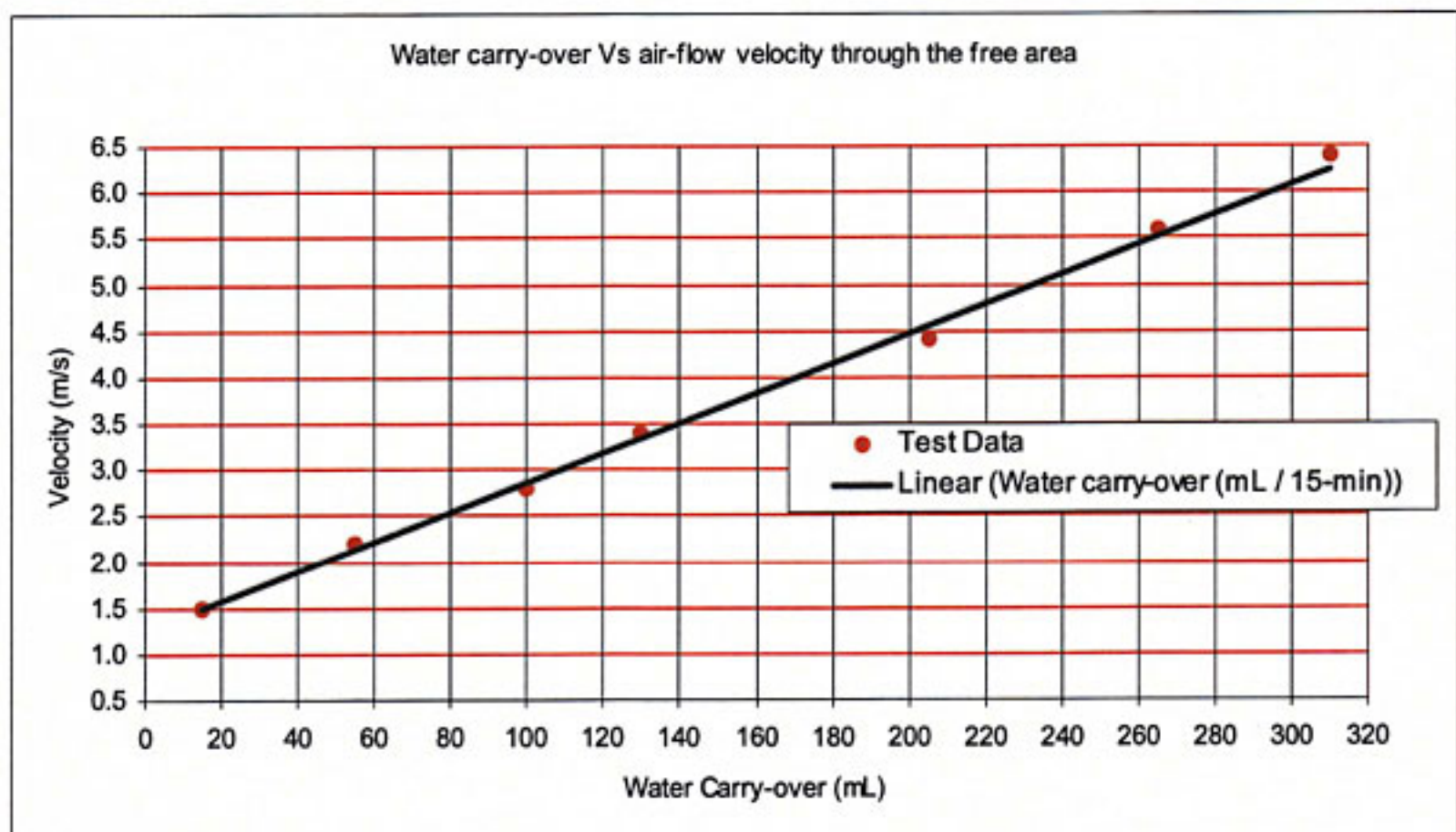


Figure 5: Water Carry-over Vs Air Flow Velocity through the free area