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Mr. Doug Gunn
Director
Vent-A-Roof
PO Box 189
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Re: JCE A150 – LETTER OF ADVICE – VENT-A-ROOF PRODUCT

Dear Doug,

This letter summarises professional advice on the installation of the Vent-A-Roof product on residential and commercial properties throughout Australia, focusing on Structural aspects.

This letter references the following documentation:

- Ez Vent-N-Closure System Cross Section drawings, provided to J.C. Engineers on 10th December 2018.
- Sekisui Foam Australia's Material Safety Data Sheet for Volara Crosslinked Polyolefin Foam, provided to J.C. Engineers on 4th February 2019.
- Ez Vent-N-Closure Profile Drawings, provided to J.C. Engineers on 10th December 2018.
- Vent-A-Roof CAD Profile Drawings, provided to J.C. Engineers on 10th December 2018.
- Vent-A-Roof's Brochure for Residential Homes, provided to J.C. Engineers on 10th December 2018.
- Machinery Solutions Pty. Ltd.'s Report for Vent-A-Roof, dated 18th October 2018.
- Farabaugh Engineering and Testing Inc.'s Air Leakage Test Performance Report, dated 25th January 2018.
- Farabaugh Engineering and Testing Inc.'s Wind Driven Rain Test Summary Report, dated 21st May 2018.
- Australian Standard 1562.1:2018 Design and Installation of Sheet Roof and Wall Cladding Part 1: Metal.
- Australian/New Zealand Standard 1170.2:2011 Structural Design Actions Part 2: Wind Actions.
- Australian Standard 4055:2012 Wind Loads for Housing

AERODYNAMIC SHAPE FACTOR – INTERNAL PRESSURES

AS 1170.2:2011 describes internal pressure as *"a function of the external pressures, and the leakage and openings in the external surfaces of the building or an isolated part of a larger building"*. Figure 1 provides a visual representation of the difference between internal and external pressures.

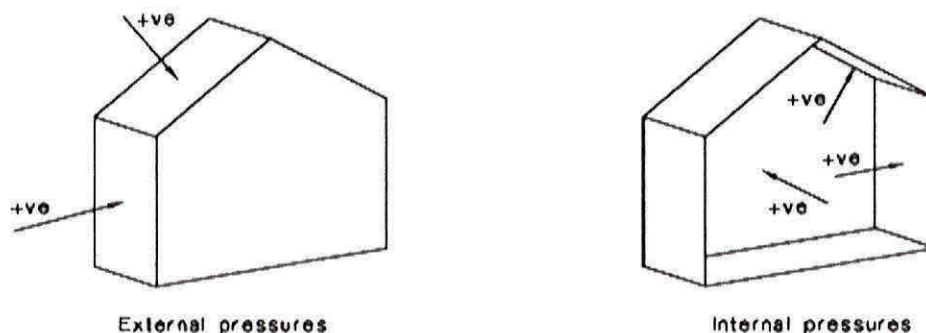


Figure 1: Illustration of External and Internal Pressures on Houses (extracted from AS 1170.2:2011 on 20/12/2018)

Naturally, internal pressures can vary in direction and intensity as a result of the external pressures applied to the building (i.e. wind gusts in storms). Generally, the external roofing/walls are subject to forces in the resultant pressure (i.e. difference between external and internal pressures). For example; If the internal pressures are greater than the external pressures, roofing/walls are forced to 'push-out' from their original position.

The purpose of the Vent-A-Roof product is to provide free-flowing permanent ventilation for the house. It is installed on the highest points of the house (i.e. ridgeline of the roofing) to maximum the opportunities of temperature control. Figure 2 provides an visual example of air movement through the Vent-A-Roof product.

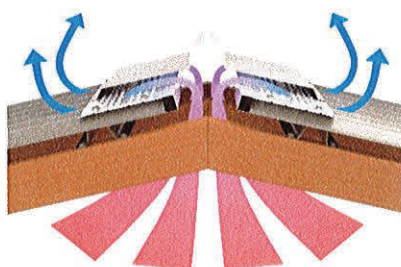


Figure 2: Illustration of Air Movement through Vent-A-Roof product

Farabaugh Engineering and Testing Inc. have undertaken Air Leakage Testing on the Vent-A-Roof product. Table 1 provides a summary of these results.

****Please note: 'Infiltration' = air exiting the roof cavity and 'exfiltration' = air entering the roof cavity**.**

Table 1: Test Data from Farabaugh Engineering and Testing Inc's Air Leakage Testing

Test Pressure [Psf]	Test Pressure [Pa]	Infiltration		Exfiltration		Ratio (%)		Difference (m3/s)
		Air Leakage Rate [Cfm]	Air Leakage Rate (m3/s)	Air Leakage Rate [Cfm]	Air Leakage Rate (m3/s)	Infiltration	Exfiltration	
1.57	75.17	44	0.020765688	37.5	0.017698029	54%	46%	0.003067658
6.24	298.77	86.1	0.040634675	74.5	0.035160085	54%	46%	0.00547459

The test results show that a greater volume of air 'escapes' through the Vent-A-Roof product than what is let in, approximately 8% difference. The results also show that as the test pressure increases, the rate of air escaping through the Vent-A-Roof product increases.



CONCLUSIONS AND RECOMMENDATIONS

Based on the abovementioned details, it is determined that the Vent-A-Roof product will only improve the structural integrity of residential and commercial properties, when installed in the ridgeline areas of the metal sheeting roofing. The Vent-A-Roof product allows a higher rate of air extraction from the roof cavity as air pressures increase. Therefore, it can be said that the product performs better in higher air pressures and therefore more intense weather.

The attached Form 15 provides engineering certification for this structural aspects of the Vent-A-Roof product.

We would like to thank you for your business and wish you the best for your future works. Please do not hesitate to contact me to discuss, if needed.

Kind regards,

Brendan Nielsen

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Director

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On behalf of J.C. Engineers Pty.Ltd.