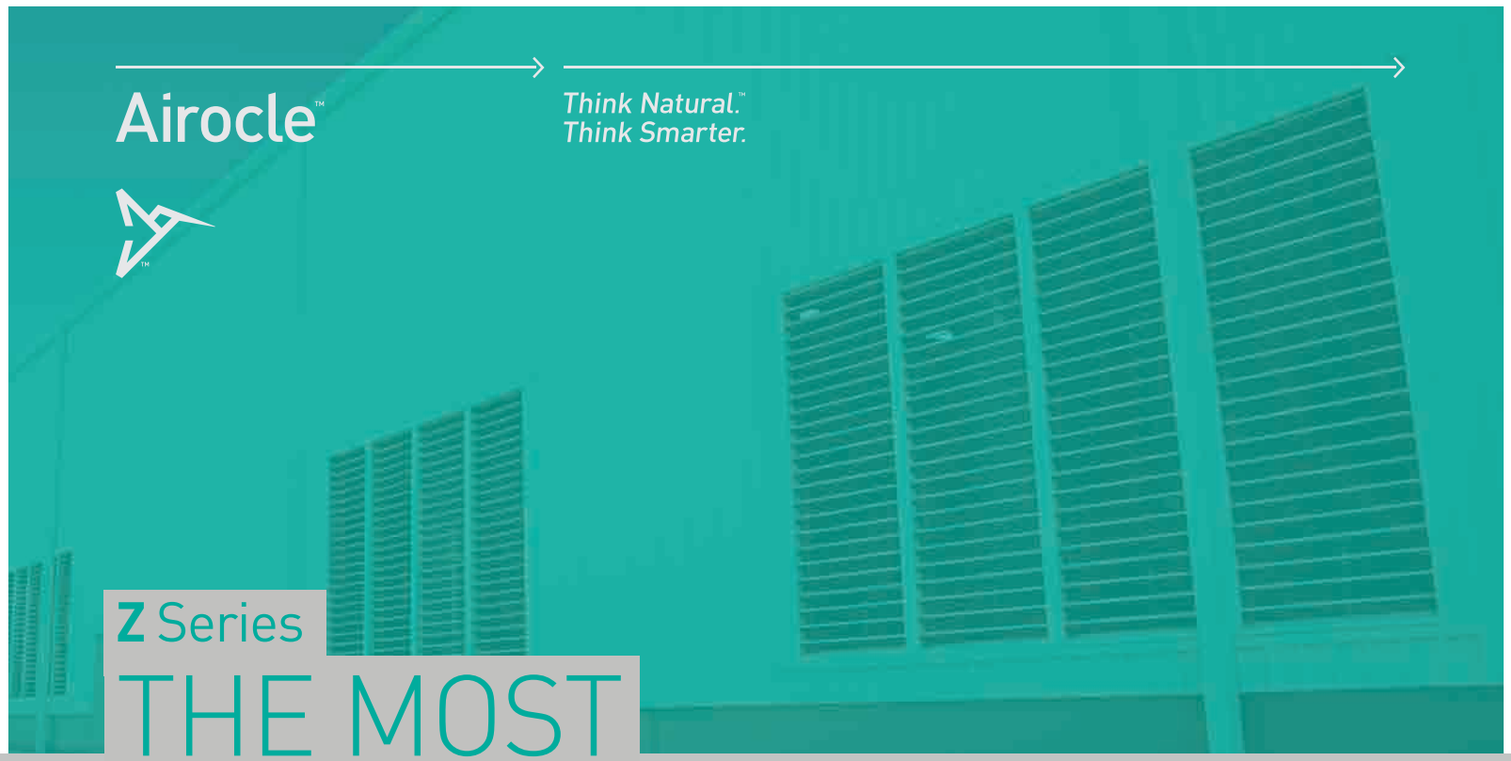
Airocle™

Think Natural.™
Think Smarter.



Z Series

THE MOST EFFECTIVE AND EFFICIENT SOLUTION IN ITS CLASS

R Roof W Wall

Z SERIES

VENTS & VENTILATORS

FIRE & SMOKE VENT

CSIRO CERTIFIED

CSIRO

Tested and certified by CSIRO® for airflow, fire and weather performance

Natural Pressure Relief Ventilators

Wall Solutions

Roof Solutions

Passive Natural Ventilation

Engineered Design

Market Leading Performance

Ideal For Sustainable Building Design

Tested and certified by CSIRO® for airflow, fire and weather performance

Z SERIES

Ventilation solution in situations where fast ventilation is needed.

The safety and well being of your building and occupants is our number one priority. By incorporating a reliable and highly efficient natural ventilation system to manage your fire, smoke and contaminant hazard management, you can deliver a solution which allows occupants to evacuate safely, reduce the spread of fire and minimise the risk to emergency services.

With the increasing shift towards greater sustainability in building design, the use of natural ventilation for HVAC and smoke management is becoming increasingly popular for both new buildings and existing buildings during refurbishment.

Design

Simple and Robust

The simplicity and functionality for smoke management has seen natural ventilation become common practice around the world. By embracing the natural rising behaviour of warm smoke, natural ventilation reduces or even eliminates the need for fans - making design, installation, commissioning and servicing easier practically and financially.

Reliable

Natural Ventilation provides safety and certainty for occupiers by ensuring reliable, fail safe operation in emergencies. The absence of complex damper arrangements, mechanical fans and excessive fire rated cabling ensures that natural ventilation provides your building reliability and certainty in managing smoke and fire. The other advantage of using natural ventilation is that the size of the fire is less of a concern for designers as the larger the fire, the more efficient the natural ventilation system becomes.

Sustainable

The increasing move towards more green and environmentally sustainable building design concepts means that natural ventilation designs are fast becoming the first choice in smoke management. Natural smoke management and ventilation systems are reducing the need for expensive exhaust fans and removing the power and maintenance costs that come with them.

Weather Protection

Weather performance of our ventilators is critical to the integrity of your building. Designed with cyclone conditions in mind, our fully engineered drainage system prevents water ingress and ensures those inside are not exposed to what is outside.

Benefits

Cyclone Rating

The **Z Series** can be engineered to suit cyclone regions up to and including Categories C and D. With natural ventilation providing a connection between internal and external environments, the ability to ensure that your project remains Weather tight in the harshest of weather conditions is critical.

Rapid and Reliable Response

Designed from the ground up with a focus on quick response, the Z Series utilises a combination of clever design and high quality componentry to deliver fail safe operation, user control and improved safety and amenity to occupants. Market leading airflow performance ensures that smoke is ventilated more effectively and efficiently than ever. The ability to open for natural lighting and be linked with a range of weather and rain sensors also ensures that your ventilation system responds to changing environments, protecting occupants and your building from the elements at all times.

Bushfire Rating

The Z Series can be fitted with bushfire rated mesh to ensure that your ventilation and smoke hazard management system meets bushfire requirements. Ensure that your building is safe by efficiently exhausting heat and smoke while also protecting it from outside threats.

Projects

Unrivalled reliability, safety and response have made the Z Series the easy choice for engineers, architects and building designers for a range of projects including:

- Aircraft Hangaars
- Theatres and Public Halls
- Galleries
- Workshops
- Warehouses
- Chemical Storage
- Entertainment Complexes
- Atriums
- Petrochemical and Gas Processing Plants
- Chemical Storage
- Laboratory Test Facilities

Quality

RAIN
AS2428.1

WIND
AS2428.2

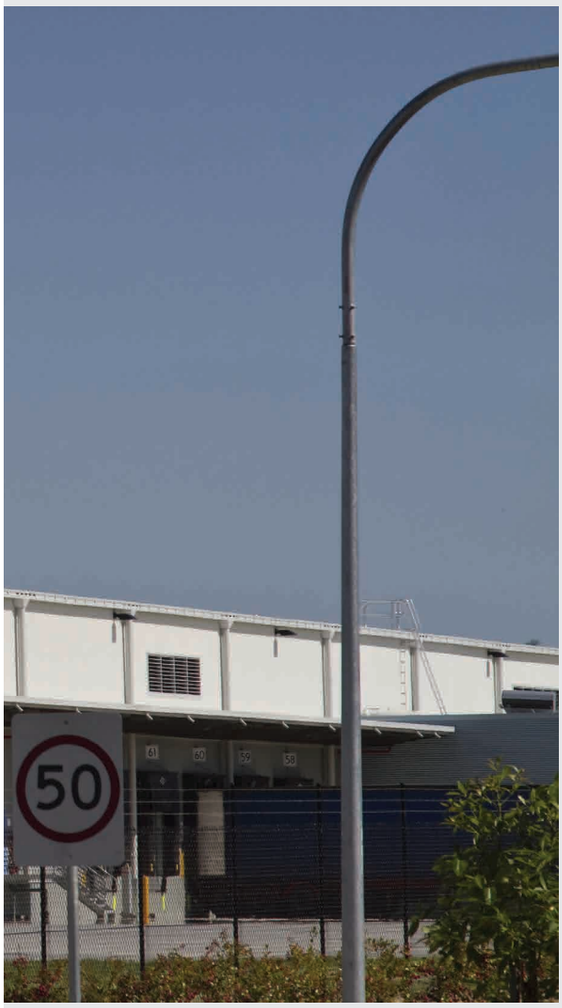
FIRE
AS2428.4

COEFFICIENT OF DISCHARGE
AS2428.5

CSIRO tested, the Z Series is designed for the most demanding of environments including Category C and D Cyclone Regions. The ability to operate with the highest levels of reliability and safety while achieving complete weather performance provides peace-of-mind for designers, builders and most of all occupants.

Z Series > Heat and Smoke Ventilators

Engineered for any environment demanding reliable ventilation for medium heat loads, the Z Series provides effective and efficient performance for all external and internal environments.



WAREHOUSING + STORAGE

INDUSTRIAL WORKSHOPS

SCHOOLS + EDUCATION FACILITIES

HALLS, GYMNASIUMS + INDOOR POOLS

DEFENCE + GOVERNMENT BUILDINGS

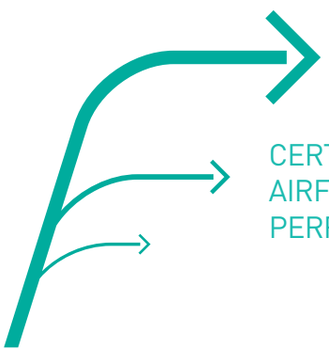
ELECTRICITY SUBSTATIONS + WATER PUMP HOUSES

BigW Hoxton Park
NSW Australia
Heat & Smoke Vent
Z Series

ZS

RIDGE + SLOPE
DESIGN

Scientific engineering principles has lead to our Z Series providing optimal performance in all weather conditions and minimises the risk of back drafting and the entry of moisture.



0.83Cd

CERTIFIED TESTED AIRFLOW PERFORMANCE

Ensure Your Safety

Aside from electric or pneumatic actuation of the blades during a fire trip, the unique fusible link design in the Z Series ensures that your vents provide fail safe operation during emergency events even if power to the building is lost. Designed to meet and exceed stringent Australian Standards, the Z Series provides peace of mind to the designers and occupants of every building. The option of a pneumatic system and receiver tank provides emergency services the ability to open/close the system

Have Complete Control

Why limit the use of your smoke ventilators to emergency events? The **Z Series** provides occupants the ability to electrically or manually open and close the vents so they can take advantage of natural day lighting or improve the natural ventilation of the building space.

Link the **Z Series** to a range of air quality, gas, thermostatic, weather or timing sensors and help automate your building to provide occupants the safety and comfort they deserve. The ability to reduce servicing, improve environmental performance and minimise power costs ensures your building is more sustainable.

Air Flow Performance

The high coefficient of discharge and free open area of the **Z Series** ensures that your project delivers the highest level of air flow performance with the minimum vent area. Why risk the look and feel of your building when you can find an effective yet low visual impact solution to your smoke management and ventilation needs.

In line with our design philosophy of maximising airflow the **Z** Series is tested by CSIRO laboratories to Australian Standards ensuring that your project is provided the performance you expect.

Workmanship

Designed and manufactured in Australia using Australian materials, the **Z Series** is manufactured under strict quality control processes to ensure engineering integrity. Workshop drawings, documentation and technical support are available throughout the design and installation process.

Inlet/Makeup Air

Due to the need for makeup air, adequate inlets are essential for any ventilation system to operate effectively. While it is recommended an inlet ratio of 1.5 : 1 (inlet : discharge) exist, Airocle can assist in designing or developing a ventilation system to suit custom circumstances.

ZFW MODEL
Wall Mounted Option

Ideal for wall-mounted smoke management solutions, the ZFW is the favoured solution for many warehouse, school hall, shopping centre, and entertainment complex designers. Cost effective while providing efficient and reliable airflow performance, the ZFW provides a simple, easy to implement form of smoke hazard management and natural ventilation for a variety of building applications.

MODEL	INTERNAL OPENING (mm)		EXTERNAL SIZE (mm)			FREE OPEN AREA (%)	FREE OPEN AREA (M^2)	COEFFICIENT OF DISCHARGE (Cd)	EFFECTIVE AERODYNAMIC AREA (M^2)	ACTUATOR OPTIONS (PA)	
	WIDTH	LENGTH	WIDTH	HEIGHT	DEPTH					PNEUMATIC	ELECTRIC
ZFW-1012	895	1040	995	1180	200	87	0.81	0.83	0.67	Yes	Yes
ZFW-1018	895	1650	995	1790	200	87	1.28	0.83	1.07	Yes	Yes
ZFW-1024	895	2260	995	2400	200	87	1.76	0.83	1.46	Yes	Yes
ZFW-1030	895	2870	995	3010	200	87	2.23	0.83	1.85	Yes	Yes
ZFW-1112	995	1040	1095	1180	200	87	0.90	0.83	0.75	Yes	Yes
ZFW-1118	995	1650	1095	1790	200	87	1.43	0.83	1.19	Yes	Yes
ZFW-1124	995	2260	1095	2400	200	87	1.96	0.83	1.62	Yes	Yes
ZFW-1130	995	2870	1095	3010	200	87	2.48	0.83	2.06	Yes	Yes
ZFW-1212	1095	1040	1195	1180	200	87	0.99	0.83	0.82	Yes	Yes
ZFW-1218	1095	1650	1195	1790	200	87	1.57	0.83	1.30	Yes	Yes
ZFW-1224	1095	2260	1195	2400	200	87	2.15	0.83	1.79	Yes	Yes
ZFW-1230	1095	2870	1195	3010	200	87	2.73	0.83	2.27	Yes	Yes
ZFW-1312	1195	1040	1295	1180	200	87	1.08	0.83	0.90	Yes	Yes
ZFW-1318	1195	1650	1295	1790	200	87	1.72	0.83	1.42	Yes	Yes
ZFW-1324	1195	2260	1295	2400	200	87	2.35	0.83	1.95	Yes	Yes
ZFW-1330	1195	2870	1295	3010	200	87	2.98	0.83	2.48	Yes	Yes
ZFW-1412	1295	1040	1395	1180	200	87	1.17	0.83	0.97	Yes	Yes
ZFW-1418	1295	1650	1395	1790	200	87	1.86	0.83	1.54	Yes	Yes
ZFW-1424	1295	2260	1395	2400	200	87	2.55	0.83	2.11	Yes	Yes
ZFW-1430	1295	2870	1395	3010	200	87	3.23	0.83	2.68	Yes	Yes
ZFW-1512	1395	1040	1495	1180	200	87	1.26	0.83	1.05	Yes	Yes
ZFW-1518	1395	1650	1495	1790	200	87	2.00	0.83	1.66	Yes	Yes
ZFW-1524	1395	2260	1495	2400	200	87	2.74	0.83	2.28	Yes	Yes
ZFW-1530	1395	2870	1495	3010	200	87	3.48	0.83	2.89	Yes	Yes

Note: Full detail drawings for all products including site specific details are available on request. Please contact us and we'll make sure to help.

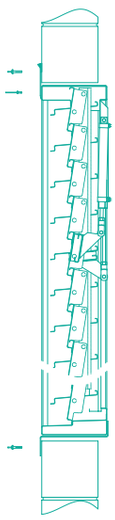
ZFR MODEL
Roof Mounted Option

Designed for community and small industrial smoke and fire venting, the ZFR model provides high levels of airflow in an economical way. The wide range of sizes allow architects and engineers flexibility in incorporating the vents into building design while ensuring that occupants of schools, halls, theatres, cinemas and shopping centres are provided with adequate smoke relief in emergency situations.

MODEL	INTERNAL OPENING (mm)		EXTERNAL SIZE (mm)			FREE OPEN AREA (%)	FREE OPEN AREA (M^2)	COEFFICIENT OF DISCHARGE (Cd)	EFFECTIVE AERODYNAMIC AREA (M^2)	ACTUATOR OPTIONS (PA)		Cyclone Rated Option	
	WIDTH	LENGTH	WIDTH	LENGTH	HEIGHT					PNEUMATIC	ELECTRIC	CAT C	CAT D
ZFW-1012	895	1040	995	200	1180	87	0.81	0.83	0.67	Yes	Yes	Yes	Yes
ZFW-1018	895	1650	995	200	1790	87	1.28	0.83	1.07	Yes	Yes	Yes	Yes
ZFW-1024	895	2260	995	200	2400	87	1.76	0.83	1.46	Yes	Yes	Yes	Yes
ZFW-1030	895	2870	995	200	3010	87	2.23	0.83	1.85	Yes	Yes	Yes	Yes
ZFW-1112	995	1040	1095	200	1180	87	0.90	0.83	0.75	Yes	Yes	Yes	Yes
ZFW-1118	995	1650	1095	200	1790	87	1.43	0.83	1.19	Yes	Yes	Yes	Yes
ZFW-1124	995	2260	1095	200	2400	87	1.96	0.83	1.62	Yes	Yes	Yes	Yes
ZFW-1130	995	2870	1095	200	3010	87	2.48	0.83	2.06	Yes	Yes	Yes	Yes
ZFW-1212	1095	1040	1195	200	1180	87	0.99	0.83	0.82	Yes	Yes	Yes	Yes
ZFW-1218	1095	1650	1195	200	1790	87	1.57	0.83	1.30	Yes	Yes	Yes	Yes
ZFW-1224	1095	2260	1195	200	2400	87	2.15	0.83	1.79	Yes	Yes	Yes	Yes
ZFW-1230	1095	2870	1195	200	3010	87	2.73	0.83	2.27	Yes	Yes	Yes	Yes
ZFW-1312	1195	1040	1295	200	1180	87	1.08	0.83	0.90	Yes	Yes	Yes	Yes
ZFW-1318	1195	1650	1295	200	1790	87	1.72	0.83	1.42	Yes	Yes	Yes	Yes
ZFW-1324	1195	2260	1295	200	2400	87	2.35	0.83	1.95	Yes	Yes	Yes	Yes
ZFW-1330	1195	2870	1295	200	3010	87	2.98	0.83	2.48	Yes	Yes	Yes	Yes
ZFW-1412	1295	1040	1395	200	1180	87	1.17	0.83	0.97	Yes	Yes	Yes	Yes
ZFW-1418	1295	1650	1395	200	1790	87	1.86	0.83	1.54	Yes	Yes	Yes	Yes
ZFW-1424	1295	2260	1395	200	2400	87	2.55	0.83	2.11	Yes	Yes	Yes	Yes
ZFW-1430	1295	2870	1395	200	3010	87	3.23	0.83	2.68	Yes	Yes	Yes	Yes
ZFW-1512	1395	1040	1495	200	1180	87	1.26	0.83	1.05	Yes	Yes	Yes	Yes
ZFW-1518	1395	1650	1495	200	1790	87	2.00	0.83	1.66	Yes	Yes	Yes	Yes
ZFW-1524	1395	2260	1495	200	2400	87	2.74	0.83	2.28	Yes	Yes	Yes	Yes
ZFW-1530	1395	2870	1495	200	3010	87	3.48	0.83	2.89	Yes	Yes	Yes	Yes

Installation

An even distribution across the roof area is appropriate for flat or very shallow roofs, but venting in steep roofs would be more effective if located near the apex.



Installing in Walls

A flat surface is required for the vent to be fitted and where the surface is stepped or uneven, additional mounting frames may be required. Additional mounting frames may also need to be utilised where the vents are being fitted in very thin enclosure walls such as steel containers or in situations where vents are being installed alongside fire dampers.

The building contractor must ensure that once the vent is fitted and the mounting screws fully tightened, that the vent is free of any distortion and all the blades are able to freely move such that they can fully open and close under normal operating conditions.

Installing on Roofs

The **Z Series** roof model is supplied with a custom soaker base to suit all roof pitch and profile types ensuring that each vent is positioned at a maximum angle of 10° for optimal drainage performance.

The building contractor must ensure that the vent is fitted appropriately to the roof structure and that any internal structural supports do not impede the flow path through the vent and that all blades are able to freely move such that they can fully open and close under normal operating conditions.

Determining Vent Location

The most favourable location for fire and smoke relief is an exterior wall close to where anticipated incidents may occur. Vents should be located at a high level to exhaust rising smoke and heat to reduce lateral spread of heat and smoke.

Designers should attempt to optimise smoke exhaust by avoiding unvented compartments where smoke can build up. It is recommended that designers consult their relevant local building regulation or standards when designing a smoke exhaust system. The **Z Series** has a known coefficient of discharge which can assist designers in their modelling of smoke and fire venting events.

Accoustic Dampening

Our unique Phonic acoustic dampening system can be fully integrated into the Z Series. An efficient method of noise attenuation, the use of ignition retardant and hydrolysis resistant insulation allows vents to reduce noise transmission both out of and into the building, and retain their high discharge coefficient heat and smoke ventilation properties. For further details on the accoustic damening NATA test results please contact Airocle.

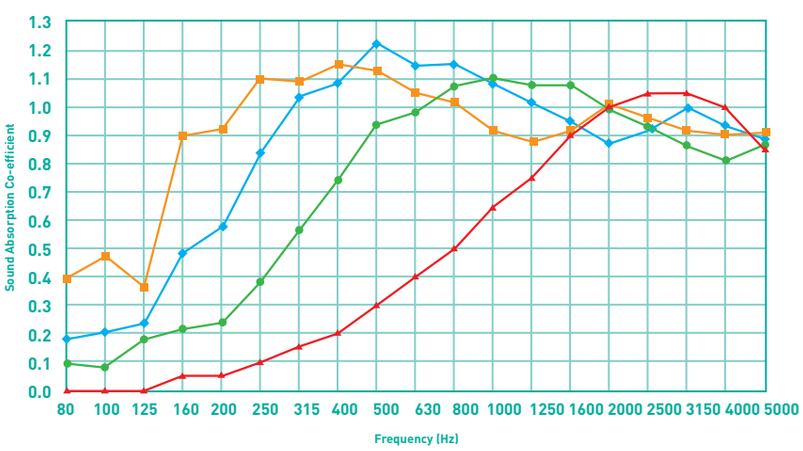
Acoustic Performance

Tested to AS1045-1988 Reverberation Room.

FREQUENCY (HZ)	RANDOM INCIDENCE ABSORBTION COEFFICIENT		
	Megasorber FG25	Megasorber FG50	Megasorber FG100
100	0.08	0.21	0.47
125	0.18	0.24	0.37
160	0.22	0.49	0.90
200	0.24	0.58	0.92
250	0.38	0.85	1.10
315	0.56	1.04	1.09
400	0.74	1.09	1.15
500	0.94	1.23	1.13
630	0.98	1.15	1.05
800	1.07	1.15	1.01
1000	1.11	1.08	0.92
1250	1.08	1.02	0.88
1600	1.08	0.95	0.91
2000	0.99	0.87	1.01
2500	0.93	0.92	0.96
3150	0.86	1.00	0.91
4000	0.81	0.94	0.90
5000	0.86	0.89	0.91
NRC	0.85	1.01	1.04
∂w	0.7(MH)	1.00	1.00

Sound Absorption of Megasorber FG Products

(Tested to AS ISO 354-2006 Acoustics: Measurement of sound absorption in a reverberation room)



Megasorber FG100, NRC = 1.04

Megasorber FG50, NRC = 1.01

Megasorber FG25, NRC = 0.85

Megasorber FG12, NRC = 0.58

RMIT University Test Report: 121I/11-169/PD
RMIT University Test Report: 121I/11-171/PD
RMIT University Test Report: 121I/11-173/PD

Options

We let you harness the flexibility of the Z Series because getting the most out of your investment is important. Our constant drive for product innovation and tailored engineering solutions means your project has the ability of integrating a range of optional features leading to more efficient, effective and sustainable building designs.

Insect Resistant Mesh

We understand that keeping birds and insects from entering the ventilator frame and space is important for sensitive internal environments and when using the **Z Series** for natural day lighting. The **Z Series** is able to be fitted with stainless steel insect resistant mesh to protect from the curiosity of nature.

Bird Resistant Mesh

Take advantage of the natural day lighting that the **Z Series** can provide while not having to worry about nature's friendly intruders. The ability to incorporate bird resistant mesh ensures that your project can let the light in while keeping birds out.

Cyclone Projectile Mesh

The **Z Series** is able to be fitted with Cyclone Projectile Mesh which meets the highest levels for Cyclonic Debris Screening according to the requirements of AS1170.2:2011. This protects against structural damage to the blades ensuring your pressure relief system remains functional in even extreme weather while providing a Free Open Area of 60%.

Security Mesh

The high value and sensitive nature of buildings requiring smoke and fire venting means that security can be essential. The nature of many of these buildings makes them the target of vandals and intruders. With the use of tamper-proof screws along with specifically engineered frames and mesh, this option ensures that your building is provided with extra protection.

Materials & Finishing

We have the ability to suit every application including corrosive or volatile environments by fabricating the **Z Series** in a range of materials including:

- Colorbond®
- Colorbond® Ultra
- Zincalume®
- Aluminium
- Stainless steel

Our manufacturing process also allows us to colour match custom colours as well as provide all Colorbond®, Colorbond® Metallic and Dulux colour finishes.

If your project requires a unique fabrication or design alternative, please contact us on 02 4677 7300 as we are willing to help.

Shipping

The **Z Series** is available in completely assembled units ready for installation.

How to Specify

Description

Smoke and Heat Relief Ventilator(s) shall be of operable louvre blade arrangement design. Design shall include all applicable dampers. Fixings, trims, flashings and other specified fittings. Install to manufacturers recommendations.

Performance

Smoke and Heat Relief ventilator is to be tested to:

RAIN	WIND	FIRE	COEFFICIENT OF DISCHARGE
AS2428.1	AS2428.2	AS2428.4	AS2428.5

Pressure Relief Ventilator(s) shall have a Coefficient of Discharge of ≥0.80 to ensure engineered ventilation design requirements for the space are met.

Size

Ventilator(s) to have an internal size of _____ mm long x _____ mm wide with an effective aerodynamic area of _____ m² based on performance requirements as above.

Proprietary Item

Z Series Model _____ as manufactured by Airocle (airocle.com.au)

Operation

Ventilator(s) shall consist of pneumatically operated blades with fail safe spring return open/close and copper airline articulation.

Or

Ventilator(s) shall consist of electrically operated blades with fail safe spring return open/close operation and fire rated cabling.

Features

Ventilator shall incorporate:

- Bird Mesh with ≤11.2mm aperture and ≥77% FOA
- Insect Mesh with ≤6.8mm aperture and ≥67% FOA
- Bushfire Mesh with ≤2mm aperture and ≥61% FOA
- Manual Operable Guidevane Dampers
- Electric Operable Guidevane Dampers with spring return open/close 240v/24v actuator
- Pneumatic Operable Guidevane Dampers with spring return open/close actuator
- Ridgelite® with ≥__% Light Transmission, ≤__% Heat Transmission and IVR Transmission of ≤0.1
- Acoustic Treatment to ensure a minimum Sound Transmission Class (STC) Rating of 13
- Weather sensors and control to enable manual/automatic operations as per system design
- Airflow sensors and control to enable manual/automatic operations as per system design

Fabrication and Finish

Ventilator(s) to be constructed in Zincalume®(VFR/VFW) / Aluminium (VER/VEW) Colour to match adjacent roof sheeting or cladding unless specified. Refer to External Finishes Schedule.

Airocle™

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Airocle.com.au

Australian owned, Airocle provides customers with a comprehensive and balanced portfolio of innovative natural ventilation solutions for sustainable commercial, industrial and community building design.

Think Natural. Think Smarter.

To find out more visit our website **Airocle.com.au** or call **1800 805 062**.

KNOWLEDGE BANK
INSPIRE + EDUCATE

The Airocle Knowledge Bank is an online resource centre designed to inspire and educate you and your clients on the benefits of natural ventilation. To find out more visit **Airocle.com.au**

AUSTRALIAN
OWNED + MADE

IVR GROUP TRADING AS AIROCLE