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NATURAL VENTILATION

# Solutions for High-Heat Loads





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**Airocle**

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Airocle

# Company Profile

About

With over a century of experience, Airocle stands as Australia's leading designer and manufacturer of natural ventilation systems. Our expertise lies in creating sustainable, high-performance solutions that enhance indoor air quality, reduce energy consumption, and support compliance across diverse industries.

Our comprehensive product range includes roof vents, louvres, and fire and smoke ventilation systems, all engineered to meet stringent Australian Standards and tailored to specific project requirements. We provide complete turnkey solutions — from design and manufacture to installation and commissioning — ensuring optimal performance and seamless project integration.

Airocle can offer extensive in-house expertise in:

- Manufacturing
- Transportation & Infrastructure
- Warehousing
- Utilities
- Water Infrastructure
- Educational & Sports Facilities
- Agriculture
- Government & High Security
- Other Industries



**What sets Airocle apart is our combination of technical expertise, collaborative design process, and customer-focused approach — all of which allow us to consistently deliver high-performing, tailored solutions.**

**Discover how Airocle can help your next project breathe naturally.**



# High Heat Loads

## The Challenge of Ventilating High-Heat Industrial Facilities

In facilities such as manufacturing plants, steel processing sites, and large-scale production warehouses, the ventilation challenge goes beyond airflow — it's about managing extreme internal heat loads created by equipment, machinery, and ongoing operations.

**For these environments, mechanical systems often create more problems than they solve:**

**Heat Recirculation:** Fans and ducted systems circulate warm air rather than expelling it effectively.

**Increased Operating Costs:** Mechanical ventilation requires constant power, driving up electricity bills in facilities that already consume high energy.

**Design Constraints:** Large, powered ventilation systems demand significant ceiling space, structural reinforcement, and integration into building services — complicating both new designs and retrofit work.

**Inefficiency in Scale:** In large or open-plan facilities, achieving uniform airflow with mechanical systems is difficult — leading to hot zones, worker discomfort, and compromised air quality.



Whether you're at the start of the design phase or responding to on-site heat issues post-occupancy, it's clear: mechanical ventilation alone is not enough.

**Why Natural?**  
Natural ventilation offers a cost-effective, low-maintenance, and sustainable alternative to mechanical systems. It is highly effective in managing high heat loads — which is why steel mills and other demanding environments around the world rely on it as the preferred solution.

Five steps  
to

# Our Process

01

02

About

Discovery &  
Initial Consultation

We begin with a discovery call to understand your building type, operational challenges, and goals. During this step, we gather architectural drawings, internal layout plans, heat source details, and any existing airflow issues — whether it's a retrofit or a new build.

Together, we define what success looks like — be it thermal comfort, compliance, or energy savings — so the solution is built around your project priorities from day one.

Site Analysis &  
Local Data Collection

If needed, we conduct a site visit to gather environmental and operational data first-hand. This may include local wind conditions, equipment heat output, roof pitch, obstructions, and any constraints that can't be captured in drawings alone.\*\*

While site visits are essential for retrofit projects, we also recommend them for new builds if plans raise concerns or local microclimates could impact airflow. Our goal: to ensure no assumptions and no surprises.

03

04

05

Modelling, Simulation &  
System Design

Using CFD modelling and environmental analysis, we simulate how air and heat will behave inside the space. This allows us to test vent sizing, placement, and balance between intake and exhaust — all before we move into manufacturing.\*\*

We then develop a tailored ventilation proposal, showing predicted performance, system layout, and integration guidance. You're involved here, reviewing the design and ensuring it aligns with your team's technical, aesthetic, and operational requirements to make an informed decision.

Finalisation & Delivery  
Coordination

Once you've signed off on the design, we move into manufacturing. Our systems are prefabricated, modular, and designed for quick, minimal disruption to your operations.

We coordinate closely with your team, builders, or trades to ensure a smooth delivery, whether you're in early construction or managing a live facility upgrade.

Commissioning, Compliance  
& Long-Term Confidence

Airocle systems are designed to operate independently and with minimal upkeep, our team is always available to support with performance checks, cleaning, or maintenance if and when you need it.

You're never left on your own — we're here for the long run



# The Airocle Advantage

## Proven in High-Heat Industrial Environments

Airocle systems are engineered specifically for large-format facilities where passive, high-capacity airflow is essential — not optional. Backed by decades of experience in industrial ventilation, our systems have been proven to outperform traditional mechanical ventilation in heat-intensive environments.

## Tailored for New Designs and Smart Retrofits

Whether you're at the drawing board or upgrading an existing facility, Airocle systems are engineered for integration without added complexity — helping teams deliver compliant, efficient ventilation that performs from day one.

## For Early-Stage Design Teams

**Design Flexibility:** No need for bulky ducts, roof penetrations, or internal plant space — allowing greater control over ceiling heights, spatial planning, and façade design.

**Engineering Simplicity:** No powered systems means no switchboard upgrades, isolators, or variable speed drives.

**Faster Project Delivery:** Lightweight, modular construction and plug-and-play installation reduces build time, site risk, and delays caused by trade overlap.

## For Retrofit and Upgrade Projects

**No Operational Disruption:** Systems are installed externally, with no need to access internal ceiling space or interrupt floor operations.

**Minimal Structural Impact:** No reinforcements required — units can be installed on existing roof structures with minimal builder's works.

**Immediate Results:** In projects like BlueScope Steel, internal temperatures dropped by up to 38°C, restoring safe equipment operation and worker comfort.

**Long-Term Savings:** Zero operating energy costs and biannual maintenance only — with no breakdowns, motors, or mechanical servicing required.

Whether you're designing for performance or upgrading to fix persistent heat issues, Airocle delivers scalable, **non-intrusive ventilation that works.**



BlueScope Steel, Erskine Park



The Airocle  
Advantage  
Through Case  
Studies

# BlueScope Steel

Location **Port Kembla, NSW**

Client **BlueScope Steel**

Following modifications to the Metal Coating Lines at BlueScope Steel’s Port Kembla facility, internal temperatures soared above 70°C, surpassing the recommended operating range for critical equipment (below 55°C). This extreme heat posed risks to both machinery and personnel, necessitating an effective ventilation solution.

**Airocle Intervention:**  
Conducted a Computational Fluid Dynamics (CFD) analysis of the facility.

Designed and implemented a tailored natural ventilation system, consisting of Airocle 4 Series roof vents.

Successfully reduced internal temperatures from over 70°C to approximately 32°C, aligning with optimal operating conditions.



BlueScope Steel, Port Kembla





The Airocle  
Advantage  
Through Case  
Studies

# Cardboard Manufacturing facility

Location **Yatala, QLD**

Client **OJI Fibre Solutions**

Issue **Heat Load from cor-  
rugator, high temperature  
and staff comfort**

Solution **Roof Vents & Wall  
Louvres (Retrofit)**

At OJI's paper manufacturing facility — where internal heat load was significantly impacting conditions — Airocle provided a full-facility ventilation solution using ridge-mounted natural ventilators.

Facility size: ~22,000 m<sup>2</sup>  
Peak internal temperatures  
prior to install: over 50°C

**Post-install performance:** average internal temperature now sits between 28-30°C even during peak operation

**Energy usage:** reduced due to no mechanical cooling required

**Outcome:** Significant improvement in thermal comfort, no ongoing operational power costs, and no system maintenance interruptions

“Thank you, Stephen and the team, for looking after OJI. We would not hesitate to use natural ventilation in any facility, and I am happy to be an advocate for your product.”

– **Tim Slade**  
Managing Director  
OJI Fibre Solutions



OJI Fibre Solutions, Yatala



Retrofit

**Tomago Aluminium**  
Tomago  
NSW

Product **4 Series**

Solution **Retrofit Ventilation for High-Heat, Corrosive Environments**

Airocle retrofitted Tomago Aluminium’s anode storage building with 4 Series low-profile vents, improving airflow, reducing reliance on mechanical fans, and withstanding extreme heat and corrosion in a 24/7 smelting environment.

**Boral Ball Mill**  
Geelong  
VIC

Recently completed, this Tasmanian Boral site features Airocle 4 Series roof vents, built for high-temperature environments.

The system ensures stable airflow, helping to control internal heat and support consistent production operations.

Product **4 Series**

Solution **Retrofit Heat relief/thermal comfort**



Retrofit



Retrofit

**Bendigo Coal Wash Plant**  
Hunter Valley  
NSW

Product **3 Series**

Solution **Retrofit Heat and steam relief**

At this Hunter Valley coal washing facility, Airocle 3 Series vents reduce heat and steam buildup while preventing structural corrosion.

The solution enhances working conditions and extends the longevity of critical infrastructure.



**BHP Rod Mill (now Infrabuild)**  
Mayfield, Newcastle  
NSW

Product **3 Series**

Solution **Long-Term Heat Management; New build and design**

Originally part of the BHP Newcastle Steelworks, the Rod Mill—now operated by Infrabuild—features Airocle 3 Series vents installed in the 1980s. Still performing today, the system effectively mitigates internal heat in heavy steel processing.



New Build



New Build

**BlueScope – MCL7**  
Erskine Park  
NSW

Product **4 Series & Louvers**

Solution **Thermal Comfort & Asset Protection; New build and design**

For the BlueScope MCL7 facility, Airocle implemented CFD-tested roof vents and louvres tailored for thermal management.

The solution helps regulate internal conditions while extending the lifespan of equipment exposed to radiant heat.

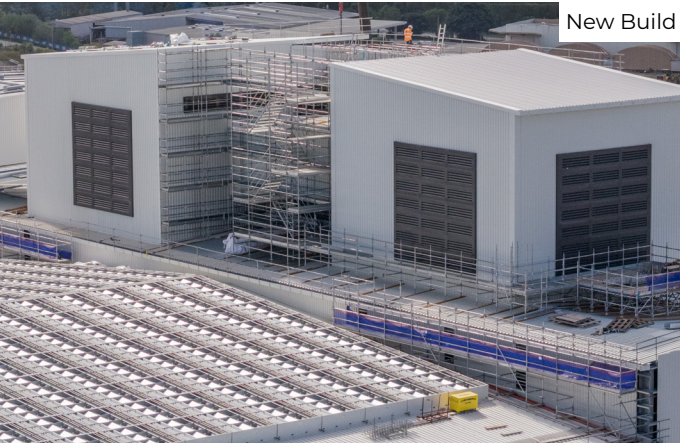
**VISY Glass Facility**  
Yatala  
QLD

Currently under construction, the VISY glass facility integrates Airocle 4 Series vents and louvres above the furnaces.

CFD analysis guided placement, ensuring heat is effectively expelled for a safer, high-performance workspace.

Product **4 Series, Louvers, CFD**

Solution **Natural Ventilation and Heat Relief**



New Build



Retrofit

**OJI Fibre Solutions**  
Yatala  
QLD

Product **4 Series, Louvers, CFD**

Solution **Retrofit Heat Relief**

OJI’s cardboard facility experienced critical heat issues prior to retrofitting with Airocle

CFD-informed solution. The 4 Series vents and louvres now provide natural relief, improving staff comfort and reducing thermal stress on the building.

