ALGAE CONTROL AUSTRALIA

Scan for case studies

PULSAR 4400 · PRODUCT GUIDE

Sustainable algae & biofilm control

Wastewater | Drinking water | Lakes & ponds | Agriculture | Aquaculture | Industrial | Mining | Golf



Introducing Pulsar 4400

The highest-precision algae targeting available

4,400 frequencies target green and blue-green algae, golden algae and dinoflagellates. This frequency set delivers the highest targeting precision for algae and biofilm control.



Algae Control Australia is a specialist provider of chemical-free algae and biofilm control, and the sole authorised distributor of SonicPure in Australia and the Asia-Pacific. SonicPure, our technology partner in the US, is a leading supplier of ultrasonic solutions that prevent and combat algae, restoring water to its natural state quickly and sustainably without harmful chemicals.

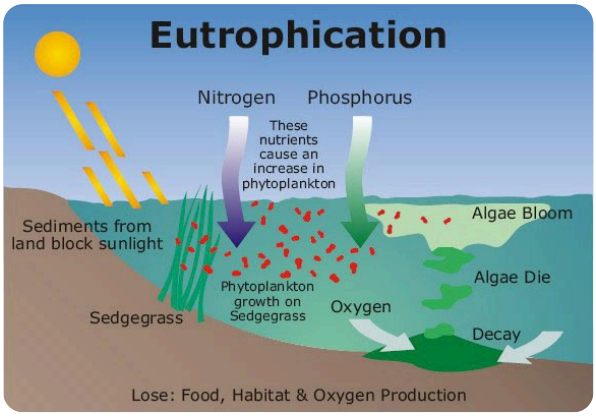
The Pulsar is the next generation in ultrasonic defence systems, designed for prevention, performance and reliability. Systems run 24/7, with high-reliability telemetry and cloud connectivity for real-time monitoring of system status, operational performance and water quality.

The problem

Algae blooms are excessive accumulations of algae, often driven by elevated nitrogen and phosphorus together with warm temperatures. Water chemistry and species characteristics also contribute.

Nitrogen and phosphorus are normal parts of healthy ecosystems, but concentrations can spike from agricultural runoff, wastewater, stormwater and household sources, and severe weather that disrupts typical water cycles can amplify them. The result is nutrient enrichment (eutrophication) and uncontrolled algal growth.

Among the most problematic blooms are those caused by cyanobacteria (blue-green algae), which may produce toxins harmful to people and pets and directly affect water quality and use. Other algae, including green, golden and red, can restrict recreation, raise the cost of producing drinking water, disrupt wastewater processing and impede industrial operations and agricultural irrigation.



Eutrophication: excess nitrogen and phosphorus fuel algae blooms that cut light, habitat and oxygen.

> *We believe access to clean water is a human right.*
>
> Algae Control Australia

Why is this urgent?

Situation	Implication
Chemicals are harmful to your water and your local ecosystem.	Most formulations keep ingredients as trade secrets, and copper sulfate ($CuSO_4$) is toxic, requiring full PPE to apply. Chemical application conflicts with environmental sustainability goals and certifications.
$CuSO_4$ persists and accumulates, degrading water quality over time.	Chemicals can destroy beneficial bacteria and trigger rebound blooms.
Most remediation is expensive and requires ongoing work to remove algae and biofilms.	Lost productivity and higher operating and maintenance costs. Alternatives such as chlorination and UV are costly to run and can disrupt downstream processes.
Algae disrupts productivity. It clogs pumps and drip lines and creates compliance and cost issues in wastewater, drinking water, irrigation and aquaculture systems.	Can shut down critical water distribution and spread cyanotoxins to crops, fish and prawns.
Some algae are highly toxic to people, pets, fish and aquatic life.	Cyanotoxins can harm people and animals, contaminate crops and cause fish kills; golden algae kills fish, and red tide can devastate communities.

How it works

On algae

- Targeted ultrasonic frequencies induce resonance in the algal cell's simple structures, disrupting mechanisms and disabling algae.
- Algae sink to the bottom and die without releasing toxins.
- No chemicals required.
- Operates 24/7 on AC or solar power.
- Remote cloud monitoring provides real-time system status and tracks water-quality metrics (e.g. chlorophyll-a, turbidity, pH, dissolved oxygen).

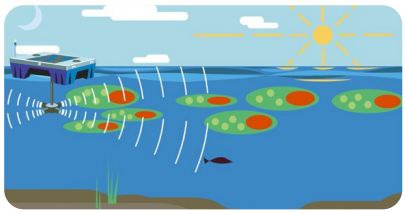
On biofilm

- Ultrasonic waves simulate water turbulence that disrupts early bacterial attachment.
- Prevents anaerobic bacteria from bonding and forming the sticky layer that holds biofilm together.
- Stops the anaerobic layer forming, hindering biofilm growth.
- Keeps surfaces cleaner, reducing maintenance and operating costs.
- No chemicals required.

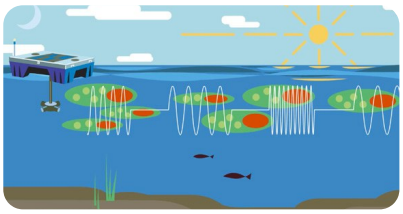




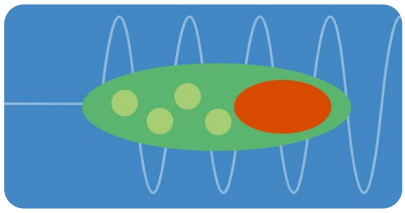
Critical structural resonance disrupts cellular structures at specific frequencies. With 4,400 frequencies, SonicPure's Pulsar 4400 affects a broad spectrum of harmful algal species, including cyanobacteria.



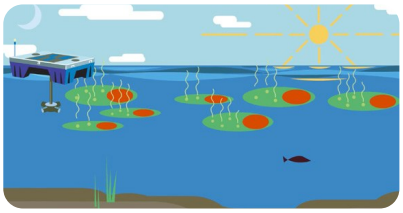
1 Emits sound waves in a 360° pattern, 24 hours a day.



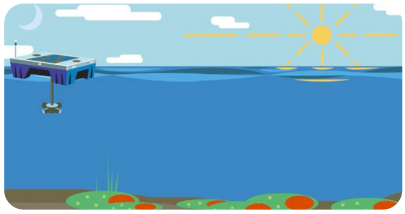
2 Deploys 4,400 discrete ultrasonic frequencies across two bands to target blue-green algae (cyanobacteria) and other harmful algae.



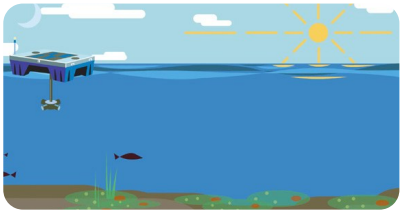
3 Disrupts gas vesicles and other cellular structures, impairing buoyancy and function.



4 Causes gas to permeate cell membranes, reducing buoyancy without releasing toxins.



5 Sinks algae to the bottom, where light deprivation drives cell death and toxins diminish over time.



6 Sustains beneficial aerobic bacteria and does not increase phosphorus release that can fuel new blooms.



High-impact use cases

Drinking water · Reservoirs and treatment plants

- Prevent blooms before they start
- Control active blooms
- Protect source and finished water
- Reduce taste and odour events and chemical demand

Wastewater processing · Clarifiers, settling ponds and lagoons

- Reduce biofilm clean-up for your operations and maintenance team
- Prevent biofilm before it forms
- Lower downstream treatment and compliance costs
- Reduce chemical demand and improve settling and clarity

Lakes and ponds · Golf courses, parks and community water

- Prevent cyanobacteria blooms; avoid closures and advisories
- Protect people, pets and fish from harmful algal toxins, without chemicals
- Improve clarity and appearance while reducing odours
- Cut ongoing maintenance costs and chemical spend

Agriculture · Irrigation reservoirs, farm dams and recycled water

- Keep irrigation water available (prevent algae and biofilm)
- Chemical-free; supports organic practices
- Avoid algicide downtime and withholding periods
- Improve pump, filter and emitter performance; fewer clogs
- Reduce maintenance and labour

Aquaculture · Fish and prawn farms, hatcheries

- Control harmful algae without chemicals; does not harm fish or prawns
- Reduce golden, blue-green (cyanobacteria) and green algae; support beneficial bacteria
- Mitigate raphidophytes (e.g. *Chattonella*) linked to gill clogging and brevetoxin events in prawns
- Initial success in trial deployments reducing sea-lice pressure in salmon

Our solution family

Our comprehensive solutions manage algae: preventing harmful blooms, combating active events and sustaining long-term improvements. Built on the Pulsar platform, the ultrasonic technology disrupts and remediates harmful algae and cyanobacteria.

The platform is configured to your site, with options for water monitoring, multiple power and deployment modes, and cloud services, either integrated with your IT systems or standalone.

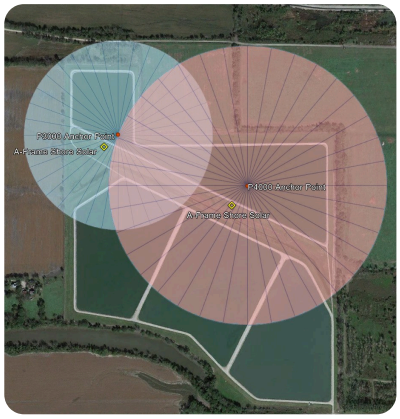
- **Pulsar 4400**: advanced ultrasonic systems that prevent and mitigate algae blooms.
- **SenseIQ**: water-quality probes tracking chlorophyll-a, cyanotoxins, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity and turbidity.
- **Sentinel AIQ and Shoreline Solar**: on-water and shoreline solar power for Pulsar deployments, plus AC power and fixed or floating mounts, with optional integrated water monitoring.
- **IQCloud**: a tiered cloud platform for end users, Algae Control Australia and SonicPure to monitor system performance and real-time data.

Feature	Pulsar 4400
Number of frequencies	4,400
Piezo transducers per head	4 heads at 90°
Algae targets	Most cyanobacteria (blue-green), green, selective golden algae and dinoflagellates
Green algae target range	150 m radius (~7 ha)
Blue-green algae target range	400 m radius (~50 ha)
Biofilm target range	60 m radius (~1.1 ha)
Power options	240 V AC, 24 V DC, solar, Sentinel AIQ/AIQ+
Head options	Single unit or dual units on the same power supply

Feature	Pulsar 4400
Antifouling (non-mechanical)	✓
Clarifier option for integrated cable	✓
Custom cable lengths	✓
Standard monitoring and telemetry: on/off, restart, reboot, sync, and measurement of operational performance and water-quality metrics at set intervals	✓
Water-quality monitoring, MiniSenseIQ: chlorophyll-a, phycocyanin (cyanobacteria)	✓
Water-quality monitoring, SenseIQ8: basic + ORP, pH, DO, turbidity	✓
IQCloud integration and access	✓

Coverage: how many do I need?

Target	Speed	Range
Cyanobacteria / blue-green algae	Impact visible in 7–10 days: gas vesicles are disrupted, algae lose buoyancy and sink, and cells die from lack of light and photosynthesis.	400 m radius (~50 ha)
Green algae and diatoms	Die in 3–4 weeks via cellular disruption.	150 m radius (~7 ha)
Biofilms	Simulated turbulence disrupts anaerobic bacterial attachment and colonisation, preventing biofilm formation.	60 m radius (~1.1 ha)



Example coverage plan showing overlapping treatment zones.

The rest of the system



Shoreline Solar

Solar power where AC power is unavailable and a cable run is feasible.



AC Power Hub

Power supply where AC power is available and a cable run is feasible; converts AC to DC.



Sentinel and Sentinel AIQ+

On-water solar platform for larger or remote sites where a cable run isn't feasible.



Pulsar Float System

The standard solution for land-based systems, cable-linked from the shore to the float.



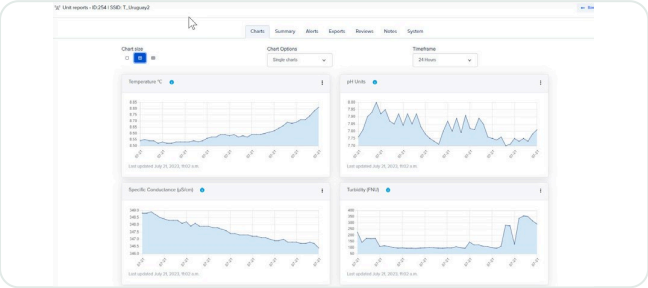
SenseIQ

Available as the small-format MiniSense and the eight-sensor SenseIQ8.

Ultrasound complements approaches that oxygenate water or encourage beneficial bacteria to tackle heavy nutrient loads and sunken biomass. Depending on site conditions, a combined strategy may be best for rapid recovery. Only ultrasound directly targets algae, and in many cases it can resolve issues on its own. Ask us about our OXYWave circulation and biological treatments.

Systems and IQCloud

Do you need water-health visibility to meet regulatory requirements or environmental goals? IQCloud is the cloud-based monitoring platform, with flexible commercial options to help you manage water assets, especially when blooms form and time is critical.



Purchase or rent

Purchase for long-term ownership and the lowest total cost, with a 3-year manufacturer warranty. Or rent to verify results before committing, converting capital expenditure to operating expenditure, with support and telemetry access included. Optional water-quality monitoring is available.



Proven results in Australia





Harrietville dredge hole, VIC

DEECA · recreation

Toxic cyanobacteria cut from 35,900 cells/mL to zero with a single Pulsar, confirmed by independent laboratory tests.

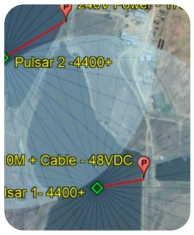




Olympic training and competition lakes, NSW

Sport and recreation

65% fewer blue-green algae cells in one week across a nine-unit monitored installation.





Carr Farming

Agriculture · 200 ML recycled water dam

75% less coagulant used after installing two Pulsar 4400+ units with 24/7 telemetry.

Full case studies, with dates and independent test results, are in our capability statement. Scan the QR code on the back page or visit algaecontrol.com.au.

ALGAE
CONTROL AUSTRALIA

TALK TO OUR TEAM

Discuss your site requirements

Tell us about your water body and the problem you want to solve. We'll recommend the right Pulsar configuration and support your team from installation to monitoring.

02 5017 9829

hello@algaecontrol.com.au

algaecontrol.com.au



For case studies and more information, scan here.

Algae Control Australia is the sole authorised distributor of SonicPure in Australia and the Asia-Pacific. Product specifications are supplied by SonicPure. Cover image is illustrative.