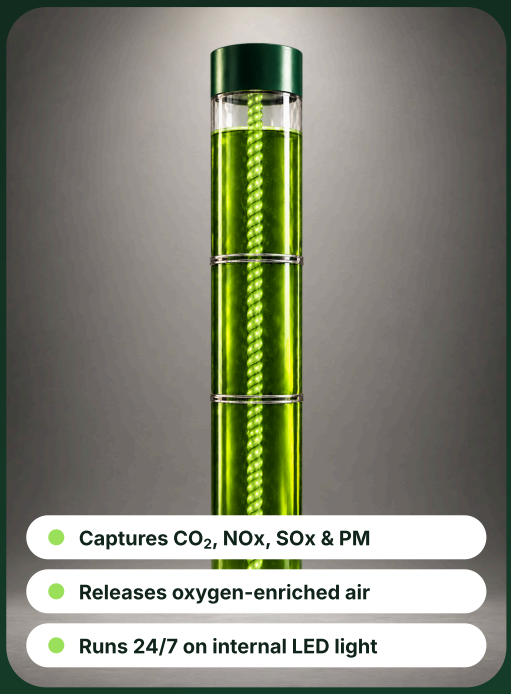
SUSTAINABLE INITIATIVES

Respyre *O2 Panel*

AIR FILTER · BIOREMEDIATOR · LIVING AIR PURIFICATION

A living air-purification system: algae and cyanobacteria doing, at building scale, what a forest does at landscape scale.

NEW Now paired with a HEPA filter



LAHORE'S AIR-QUALITY CRISIS

2nd	17.8x	AQI 168
most polluted major city, IQAir 2025	WHO annual PM2.5 guideline	average AQI: unhealthy

Air-quality figures: IQAir 2025 data for Lahore.

WHAT MAKES RESPYRE DIFFERENT

Not just a filter. *A living air-refinement system.*

Usual air filters stop at trapping particulate matter. Respyre does that too, then **actively removes CO_2, NO_x and SO_x** and **generates oxygen-enriched air**.

01 Filtration — Captures PM in the bubble column, now with a HEPA filter.

→

02 Purification — Living culture takes up CO_2, NO_x and SO_x as nutrients.

→

03 Refinement — Photosynthesis releases oxygen-enriched air, 24/7.

WHAT HAPPENS TO THE AIR	USUAL AIR FILTER	RESPYRE O2 PANEL
Particulate matter (PM)	✓	✓ Liquid & cell-surface capture, plus HEPA
Carbon dioxide (CO_2)	✗	✓ Biological carbon uptake
Nitrogen oxides (NO_x)	✗	✓ Nitrogen assimilation
Sulphur oxides (SO_x)	✗	✓ Dissolution and wet scrubbing
Generates oxygen	✗	✓ Photosynthesis releases oxygen-enriched air

Comparison is against typical filter-based air purifiers (HEPA / mechanical). Performance varies with site conditions.

Respyre O2 Panel *Bioremediator*

A MODULAR LIVING AIR-PURIFICATION PLATFORM

How it works

1. **Air enters**
   Ambient air is drawn in and sparged as fine bubbles from the base of the column.
2. **Biological uptake**
   The culture absorbs CO_2 and dissolved NO_x/SO_x as nutrients while photosynthesising under grow lighting.
3. **Extended contact**
   The thermopile lid holds bubbles for 10-15 extra seconds, so fine particulates are captured by liquid and cell surfaces.
4. **Cleaner air exits**
   Oxygen-rich air with a reduced particulate load leaves the top of the panel.
5. **Culture renews**
   Continuous illumination keeps the culture self-renewing: top-ups and biomass harvests are the only routine care.
6. **Remote oversight**
   A QR code on each panel links to a phone-based monitoring and control interface.

System design

REACTOR
6 ft (1.83 m) bubble column, ~150 L of living culture

LIVING CULTURE
Mixed microalgae and cyanobacteria

LIGHTING
Waterproof central LEDs, white:blue:red at 3:2:1

AIR DELIVERY
Fine-bubble sparging at ~70 L per minute

RETENTION LID
Thermopile lid adds 10-15 s of bubble contact

NUTRIENTS
Seaweed-extract amino-acid biostimulant plus potassium phosphate salts

2,850 m^3

of air processed per day by the 150 L panel

At full fan speed, running 24/7. Also available: 100 L (~1,920 m^3/day) and 50 L (~980 m^3/day).

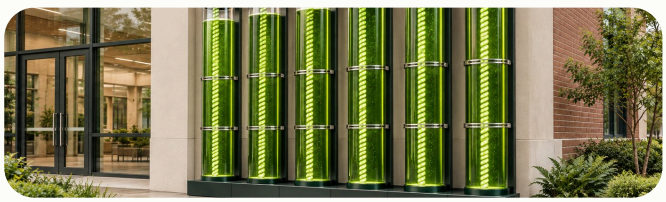
Fans slow down or switch off as dust levels drop. Performance varies with site conditions; monitor on-site.

Key advantages

- 24/7 operation, independent of sunlight
- Small footprint, modular scale-up
- Dual output: cleaner air and harvestable biomass
- Remote monitoring, low daily attention
- Self-renewing culture, minimal maintenance
- Locally developed for Lahore's pollution profile

Target applications

Schools & universities · Offices & co-working · Factories & industry · Residential buildings · Public & civic spaces



Installation visualisation: Respyre O2 Panels on a school facade.

Full-scale installations

Homes, offices, schools and commercial buildings. One panel or a modular array, tailored to your site.

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Scan to visit

Air worth breathing, grown one panel at a time.