



YATEER
CREATIVE SOLUTIONS

LIQUID TREE PROJECT



**A LIVING SOLUTION FOR
A GREENER TOMORROW**

Innovative | Sustainable | Biotech
Clean Air • Better Future • Green Technology



PROJECT PROPOSAL & TECHNICAL OVERVIEW



Catering to clients in
India, Dubai, Australia,
Mauritius, & The USA



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LIQUID TREE

NATURE'S INNOVATION FOR MORE OXYGEN

A LIQUID TREE IS AN ALGAE-BASED SYSTEM THAT USES SUNLIGHT TO ABSORB CO₂ AND RELEASE OXYGEN THROUGH PHOTOSYNTHESIS.



- Produces Oxygen
- Absorbs CO₂
- Eco-friendly
- Low Energy (Solar & Pumps)
- Ideal for Urban Spaces

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WHAT IS A LIQUID TREE?

It is a photobioreactor filled with water, nutrients, and microalgae. The algae use sunlight to grow, absorb carbon dioxide (CO₂), and release oxygen (O₂).

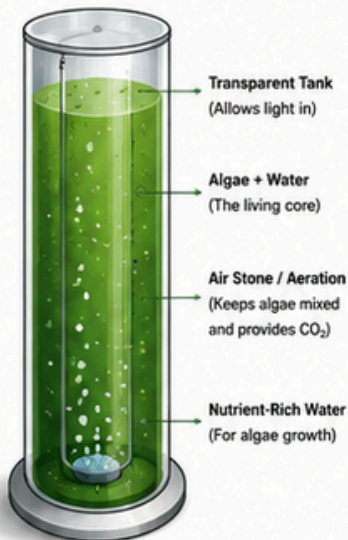
COMMON ALGAE USED



Chlorella
(High oxygen production)

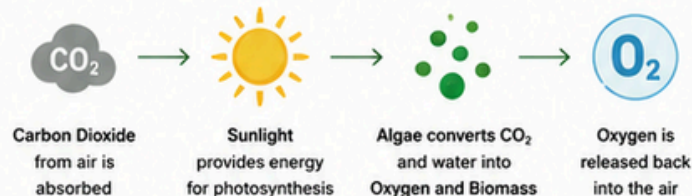


Scenedesmus
(Fast growing and hardy)



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HOW IT WORKS



THE PHOTOSYNTHESIS FORMULA



Microalgae can produce oxygen more rapidly per unit area than trees because they grow much faster and have high photosynthetic efficiency.



HOW TO CREATE A DIY LIQUID TREE (SMALL SCALE)

- 1 PREPARE THE TANK**

Clean the tank thoroughly. Fill with dechlorinated water.
- 2 ADD NUTRIENTS**

Add algae growth nutrients according to instructions.
- 3 INTRODUCE ALGAE**

Add a starter culture of microalgae.
- 4 PROVIDE LIGHT**

Place in bright sunlight or use LED grow light for 12–16 hours daily.
- 5 AERATE**

Run the air pump continuously. It supplies CO₂ and keeps algae suspended.
- 6 MONITOR GROWTH**

Water should gradually become green. Healthy algae = active photosynthesis.
- 7 MAINTENANCE**

Replace some water periodically. Add fresh nutrients. Harvest excess algae when density is very high.



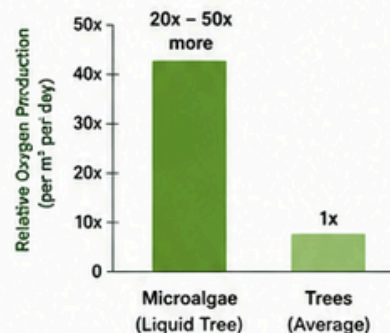
TIP: Keep the system clean, well-lit and well-aerated for best results.



Harvested algae biomass can be used as organic fertilizer, animal feed, or biofuel (in large-scale systems).

OXYGEN PRODUCTION (COMPARISON)

Microalgae produce more oxygen per unit area compared to land plants.



A small DIY tank will produce some oxygen, but it won't noticeably increase oxygen levels in a room or house. Significant oxygen production requires a much larger system.

LARGE-SCALE "LIQUID TREE" SYSTEMS



- ~600 liters of water
- Selected microalgae strains
- Continuous aeration
- Sensors for pH, temperature, and dissolved oxygen
- Solar-powered lighting and pumps
- Designed for urban areas where planting trees is difficult

Examples: LIQUID3 (Serbia) and other urban photobioreactor systems.

BENEFITS

- Produces oxygen
- Absorbs CO₂
- Reduces air pollution
- Supports sustainability
- Low water usage
- Scalable & modular
- Aesthetic & educational

USES OF ALGAE BIOMASS

- Organic fertilizer
- Animal / Fish feed
- Biofuel production
- Cosmetics & skincare
- Food supplements (certain strains)
- Research & biotechnology

IMPORTANT NOTES

- Light is crucial – more light, more photosynthesis.
- Keep temperature between 20–30°C for optimal growth.
- Maintain pH between 6.5–8.0.
- Keep the system rotating or aerated to prevent algae from settling.
- Do not allow contamination by unwanted microorganisms.



LIQUID TREES ARE NOT A REPLACEMENT FOR FORESTS, BUT A POWERFUL SUPPLEMENT TO A GREENER PLANET.



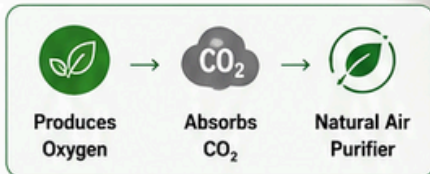
COMBINE TECHNOLOGY WITH NATURE FOR A BETTER TOMORROW.



DESKTOP LIQUID TREE MICROALGAE BIOREACTOR

Compact. Beautiful. Breathing Life into Your Space.

A desktop algae bioreactor that uses light, air and microalgae to convert CO₂ into oxygen through photosynthesis.



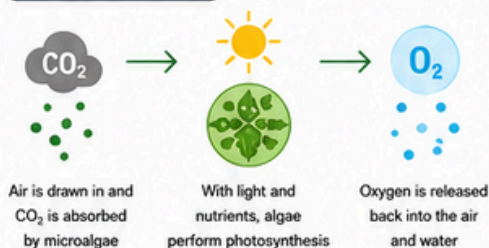
DESKTOP MODEL (6" DIA)

- Diameter
6 inches (150 mm)
- Height
18-24 inches (450-600 mm)
- Working Volume
8-10 Liters
- Material
Clear Acrylic Cylinder
- Power Supply
12V DC
- Typical Power Use
8-15 W



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HOW IT WORKS



PHOTOSYNTHESIS REACTION



OXYGEN PRODUCTION ESTIMATE

For a healthy *Chlorella* culture under strong LED lighting and continuous aeration.

10 LITER REACTOR (Usable Volume)

Algae Productivity	Oxygen Released	Daily Oxygen Production
1 - 3 g dry biomass per liter per day	1.3 - 1.5 g O ₂ per g biomass	13 - 45 g O ₂ / day

Equivalent to

9 - 31 Liters of O₂ / day

(1 liter O₂ = 1.43 g)

IMPACT IN A 100 SQ FT ROOM

Room Size
100 sq ft

Ceiling Height
10 ft (approx.)



Room Volume ≈ 1,000 cubic ft
≈ 28,300 liters of air

Air already contains ~21% Oxygen
≈ 5,943 liters of O₂

Your 10 L reactor produces
9 - 31 liters O₂ / day

Increase in oxygen concentration
(if room is fully sealed)
≈ **0.03% - 0.11% per day**

REALITY CHECK

Because of ventilation, leaks and human breathing, you will not notice a measurable increase in room oxygen.

WHAT YOU WILL NOTICE

- ✓ Lower CO₂ near the reactor
- ✓ Fresher, cleaner feeling air
- ✓ A beautiful living display
- ✓ Educational & inspiring
- ✓ Algae biomass for use
- ✗ Not a substitute for ventilation
- ✗ Not a medical oxygen device

COMPONENTS



BUILD YOUR DESKTOP LIQUID TREE (STEP-BY-STEP)



BIGGER = BETTER PERFORMANCE (Comparison)

Reactor Size (Usable Volume)	Oxygen Production (Approx.)	Best For
10 L (Desktop)	9 - 31 L O ₂ / day	Learning, CO ₂ reduction, display
20 - 25 L (Tall)	20 - 70 L O ₂ / day	Better performance, CO ₂ absorption
50+ L (Large Unit)	100+ L O ₂ / day	Stronger impact, larger spaces

Numbers vary with light intensity, temperature, strain, nutrients and aeration.

HOW MUCH OXYGEN DO WE NEED?

- 1 Adult Human (at rest) consumes ~550 liters O₂ / day
 - Desktop Algae Reactor (10 L) produces ~10 - 30 liters O₂ / day
 - Large 25 L Reactor produces ~20 - 70 liters O₂ / day
 - Mature Tree (average) produces ~100 - 250 liters O₂ / day*
- * Varies widely by species, size and environment.

A desktop liquid tree will produce only about 2 - 5% of one person's daily oxygen requirement.

TIPS FOR BEST RESULTS

- Use strong full-spectrum LED light.
- Keep temperature between 20-30°C.
- Ensure continuous aeration.
- Keep pH between 6.5 - 8.0.
- Harvest excess algae to keep culture healthy.
- Place in indirect natural light or well-lit area.

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A SMALL REACTOR. A BIG STEP TOWARDS A GREENER FUTURE.
Grow algae. Clean air. More oxygen. Naturally.

GOOD FOR YOU.
GOOD FOR THE PLANET.



DESKTOP LIQUID TREE

SMART ALGAE BIOREACTOR

A LIVING ECOSYSTEM THAT CLEANS AIR, CAPTURES CO₂ & BRINGS LIFE TO SPACES

A compact, beautiful and smart bioreactor that uses microalgae, light and air to convert CO₂ into oxygen through photosynthesis – a perfect blend of technology, sustainability and design.



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PRODUCT SPECIFICATIONS

- Diameter**
6 inches (150 mm)
- Height**
18 – 36 inches (450 – 900 mm)
- Working Volume**
8 – 20 Liters
- Material**
Clear Acrylic Cylinder
- Air Pump**
Aquarium Air Pump (Silent)
- Light**
Full Spectrum LED
- Power Supply**
12V DC (2–3A)
- Power Consumption**
15–25 Watt
- Placement**
Indoor (Desktop / Tabletop)

HOW IT WORKS



OXYGEN PRODUCTION (DESKTOP MODEL)

For a 10 Liter healthy algae culture under strong LED lighting & aeration

OXYGEN PRODUCED PER DAY

9 – 31

LITERS O₂ / DAY
(Approx.)

Increase in O₂ level in a 100 sq ft room (if sealed)
≈ 0.03% – 0.11% per day

IMPORTANT: This device improves air quality near itself by absorbing CO₂. It is not a substitute for ventilation or medical oxygen devices.

* Varies widely by species, size and environment.

COMPARISON



1 Adult Human
(At rest)
Consumes
~550 L O₂ / day



Mature Tree
(Average)
Produces
~100 – 250 L O₂ / day*



Desktop Liquid Tree
(10L Model)
Produces
9 – 31 L O₂ / day

COST BREAKDOWN (PER UNIT)

Component	Cost (₹)
Acrylic Cylinder (6" dia)	₹600 – ₹1,500
Base Enclosure (CNC)	₹800 – ₹2,000
Air Pump (Silent)	₹300 – ₹800
Air Stone & Tubing	₹50 – ₹150
LED Light (Full Spectrum)	₹300 – ₹1,000
12V Power Supply	₹250 – ₹500
Controller (ESP32)	₹250 – ₹400
Sensors (Temp, pH etc. optional)	₹300 – ₹1,500
PCB, Wiring & Misc.	₹200 – ₹500
Packaging	₹300 – ₹700
Algae Starter Culture	₹100 – ₹300
Assembly & QC	₹500 – ₹1,500

TOTAL MANUFACTURING COST

Basic Model: ₹3,500 – ₹6,000

Premium Smart Model: ₹6,000 – ₹12,000

RECOMMENDED SELLING PRICE

Basic Model
₹9,999 – ₹14,999

Premium Smart Model
₹19,999 – ₹29,999

GROSS MARGIN POTENTIAL: 40% – 70%

BUSINESS GOAL: ₹10 CRORE IN 2 YEARS

How many units do we need to sell?

OPTION A

(Avg. Selling Price ₹15,000)

6,667
Units

in 24 Months

≈ 278 Units / Month
≈ 9 Units / Day

OPTION B

(Avg. Selling Price ₹25,000)

4,000
Units

in 24 Months

≈ 167 Units / Month
≈ 5–6 Units / Day

₹10 CRORE REVENUE IS ACHIEVABLE!

With the right product, design, branding and marketing, selling 5–10 units per day is possible.

POSSIBLE GROWTH PATH (EXAMPLE)

Year	Units Sold	Avg. Selling Price	Revenue
Year 1	800 Units	₹18,000	₹1.44 Crore
Year 2	4,000 Units	₹22,000	₹8.80 Crore
TOTAL (2 YEARS)			≈ ₹10.24 Crore

WHO WILL BUY?

INDIVIDUAL (B2C)

- Tech Enthusiasts
- Sustainability Lovers
- Premium Home Owners
- Students / Educators
- Interior Designers

CORPORATE (B2B)

- Offices & IT Companies
- Hotels & Restaurants
- Hospitals & Clinics
- Schools & Colleges
- Co-working Spaces

Corporate buyers purchase 10 – 100 units at a time, creating high-value orders and repeat business.

REVENUE STREAMS

- Product Sales (One-time)**
Desktop, Pro, Tower, Wall Models
- Consumables (Recurring)**
Algae Culture, Nutrients, Additives, Filters, Maintenance Kits
- Corporate Installations**
Bulk Orders, Custom Branding, Large Size Systems
- AMC / Maintenance Plans**
Yearly Service, Spare Parts, Upgrades
- Workshops & Education**
STEM Kits, Educational Programs

Recurring revenue can add 15% – 30% extra income every month.

PRODUCT LINE (SCALABLE RANGE)

MINI (8–10L)



₹9,999
– ₹14,999

PRO (15–20L)



₹19,999
– ₹29,999

TOWER (30–60L)



₹79,999
– ₹1,29,999

WALL PANEL (80–150L)



₹1.5 Lakh
– ₹3 Lakh+

High-value B2B installations will drive majority of revenue.

HOW TO MAKE IT SUCCESSFUL

- Build an Amazing Product**
Silent, reliable, beautiful & easy to use.
- Premium Design**
People buy what looks futuristic and premium.
- Strong Branding**
Focus on life, tech and sustainability – not just oxygen.
- Content & Virality**
Time-lapse growth, smart app, CO₂ absorption visuals.
- Target Corporates**
Offer bulk deals, custom models, installations.
- Create Recurring Sales**
Consumables, service plans & upgrades bring steady income.

2 YEAR ROADMAP

- 0 – 3 Months MVP & Testing**
Build prototypes, testing, early users and validation.
- 4 – 6 Months Product Launch**
Start selling online, get reviews, improve product.
- 7 – 12 Months Scale & B2B Push**
Corporate sales, partnerships & bulk orders.
- 13 – 24 Months Expansion**
More models, distributors, PAN India presence.



IT'S NOT JUST A PRODUCT. IT'S A MOVEMENT TOWARDS A GREENER, SMARTER FUTURE.

Clean air. Green technology. Better tomorrow.



Live Green



Think Future



Grow Together

DESKTOP LIQUID TREE

CERTIFICATIONS & TESTING GUIDE

For Smart Algae Bioreactor (Liquid Tree)

SAFETY • QUALITY • PERFORMANCE • TRUST

ABOUT THE PRODUCT

A desktop algae bioreactor that uses microalgae, light & air to convert CO₂ into oxygen through photosynthesis. Designed for sustainability, education & wellness environments.

KEY BENEFITS

- Converts CO₂ into Oxygen
- Improves Indoor Air Awareness
- Low Power & Eco-friendly
- Smart Monitoring (Optional)
- Beautiful Living Ecosystem

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CERTIFICATION DEPENDS ON HOW YOU MARKET IT

DECORATIVE SMART DEVICE



Easiest Path
Minimal Regulatory Burden

AIR QUALITY DEVICE



Moderate Testing Required

HEALTH / OXYGEN DEVICE



Very Difficult
High Regulatory Burden

RECOMMENDATION: Do NOT market as a medical oxygen device.

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PHASE 1: PROTOTYPE TESTING (ENGINEERING VALIDATION)

1. ELECTRICAL SAFETY



Tests

- Input voltage tolerance
- Short-circuit protection
- Over-current protection
- Thermal testing

Standards

- IEC 62368-1
- IS 13252 (Part 1)

Est. Cost

₹20,000 – ₹50,000

2. LED SYSTEM



Tests

- Heat generation
- Surface temperature
- Light degradation
- No UV leakage

Requirements

- Surface temperature < 60°C

Est. Cost

₹10,000 – ₹30,000

3. PUMP RELIABILITY



Tests

- Continuous operation
- Noise testing
- Lifetime testing

Target

- 10,000+ hours operation

Est. Cost

₹5,000 – ₹20,000

4. SYSTEM RELIABILITY



Tests

- 30-90 days continuous run
- Algae growth stability
- Power failure recovery
- Sensor accuracy

Est. Cost

₹10,000 – ₹30,000

PHASE 2: PRODUCT SAFETY CERTIFICATION (FOR INDIAN MARKET)

1. BIS REGISTRATION



Required for electronics sold in India.

Standard
IS 13252 (Part 1)

Authority
Bureau of Indian Standards (BIS)

Cost

₹50,000 – ₹2,00,000

Timeline

2 – 4 Months

2. WPC CERTIFICATION (If WiFi / Bluetooth)



Required if product has wireless functions.

Authority

WPC, Department of Telecommunications

Cost

₹10,000 – ₹50,000

Timeline

2 – 6 Weeks

3. EMI / EMC TESTING



Tests

- EMI Emissions
- EMI Immunity

Standards

- CISPR 32
- IEC 61000 Series

Cost

₹50,000 – ₹1,50,000

4. RoHS COMPLIANCE (For Export)



Confirms absence of

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr⁶⁺)

Cost

₹20,000 – ₹80,000

PHASE 3: BIOREACTOR & BIOLOGICAL TESTING

1. ALGAE SAFETY TESTING



Verify

- No pathogenic organisms
- No contamination
- No harmful aerosol generation

Tests

- Microbial Analysis
- Water Quality Analysis
- Culture Purity Testing

Lab

NABL Accredited Labs

Cost

₹15,000 – ₹50,000 per test cycle

2. WATER STABILITY TESTING



Verify

- pH stability
- Growth stability
- Algae survival

Duration

30 – 90 Days

Cost

₹25,000 – ₹1,00,000

3. SPILL & DURABILITY TESTING



Simulate

- Accidental tipping
- Transportation vibration

Tests

- Leak resistance
- Impact resistance

Cost

₹20,000 – ₹50,000

4. MATERIAL SAFETY



Tests

- Food grade materials (if in contact with water)
- No toxic leaching
- Long-term material compatibility

Cost

₹15,000 – ₹40,000

PHASE 4: CLAIMS VALIDATION (IF MAKING PERFORMANCE CLAIMS)

A. CO₂ REDUCTION VALIDATION



Measure

- Room CO₂ before
- Room CO₂ after

Equipment

NDIR CO₂ Sensors

Duration

30 – 90 Days

Cost

₹50,000 – ₹2,00,000

B. OXYGEN PRODUCTION VALIDATION



Measure

- Dissolved Oxygen
- Released Oxygen

Equipment

Dissolved Oxygen Meter

Gas Analyzer

Cost

₹50,000 – ₹3,00,000

IMPORTANT NOTE

You cannot legally claim

- Produces 20% more oxygen in room unless verified.

Use safe claims like:

- Photosynthetic algae culture
- Converts CO₂ into oxygen
- Living microalgae ecosystem
- Supports indoor air awareness

GLOBAL CERTIFICATIONS (IF EXPANDING)

A. FOR EUROPE (CE MARK)



Standards

- CE Mark
- EMC Directive
- Low Voltage Directive (LVD)
- RoHS

Cost

₹2 – ₹8 Lakh

Timeline

3 – 6 Months

B. FOR USA MARKET



Requirements

- FCC Certification
- UL Certification (Recommended)
- RoHS Compliant

Cost

₹3 – ₹10 Lakh

Timeline

3 – 8 Months

TESTING ROADMAP FOR STARTUP



STAGE 1 (₹5 – ₹10 LAKH BUDGET)

Do:

- Electrical Safety
- EMI / EMC
- Algae Safety
- Spill Testing
- WPC (if wireless)

Outcome:
Ready to sell in India



STAGE 2 (₹15 – ₹25 LAKH BUDGET)

Add:

- BIS Certification
- CO₂ Validation
- Long-term Reliability
- CE Preparation

Outcome:
Stronger market trust & better scalability



STAGE 3 (₹30 – ₹50 LAKH BUDGET)

Add:

- CE Certification
- FCC Certification
- UL Certification
- International Distribution Testing

Outcome:
Ready for global markets

ESTIMATED COST SUMMARY (INDIA MARKET)

Phase	Scope	Estimated Cost (₹)	Timeline
1. Prototype Testing	Engineering Validation	₹50,000 – ₹1,20,000	1 – 2 Months
2. Product Safety Certification	BIS, WPC, EMI/EMC, RoHS	₹2,00,000 – ₹4,50,000	2 – 4 Months
3. Bioreactor & Biological Testing	Algae Safety, Stability, Spill, Material	₹1,00,000 – ₹2,40,000	1 – 3 Months
4. Claims Validation (Optional)	CO ₂ & Oxygen Performance	₹1,00,000 – ₹5,00,000	1 – 3 Months

Total (India Launch Ready): ₹4.5 – ₹13 Lakh (Approx.) | Total (Global Ready): ₹15 – ₹40 Lakh+ (Approx.)

*Costs may vary based on labs, product complexity & region.

WHO CAN HELP?



BIS Recognized Labs
(For Product Safety)



NABL Accredited Labs
(For Algae & Water Testing)



EMC / Safety Testing Labs



Certification Consultants
(For BIS, WPC, CE, FCC, UL)

RECOMMENDED POSITIONING

Position your product as:

SMART LIVING ALGAE BIOREACTOR



Sustainable Decor



Educational Biotechnology Product



Carbon Awareness Device



Smart Bio-Design Furniture



Wellness Lifestyle Product

AVOID THESE CLAIMS

- Medical oxygen generator
- Air purifier replacement
- Health treatment device

FOCUS ON THESE CLAIMS

- Supports indoor air awareness
- Converts CO₂ into oxygen through photosynthesis
- Living microalgae ecosystem
- Sustainable & educational product

CERTIFIED TODAY. TRUSTED TOMORROW. GROWING A GREENER FUTURE.

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LIQUID TREE

SMART ALGAE BIOREACTOR

FOR A GREENER, SMARTER TOMORROW

A living ecosystem that uses microalgae, light and air to convert CO₂ into oxygen, improve air quality and create a beautiful sustainable experience anywhere.



Captures CO₂



Releases Oxygen



Improves Air Quality



Supports Sustainability

1. DESKTOP For Personal Spaces



- Size (Dia x H) 6-8" x 18-36"
- Volume 8-20 Liters
- Best For Homes, Offices, Work Desks

Price Range: ₹10,000 - ₹30,000

2. FLOOR TOWER For Open Spaces



- Size (Dia x H) 12-18" x 4-6 ft
- Volume 80-250 Liters
- Best For Schools, Hospitals, Hotels, Offices

Price Range: ₹50,000 - ₹2,00,000

3. WALL PANEL For Walls & Big Impact



- Size (W x H) 4x4 ft to 6x8 ft (Custom)
- Volume 200-1000 Liters
- Best For IT Parks, Malls, Airports, Universities

Price Range: ₹2,00,000 - ₹15,00,000

4. ARCHITECTURAL INSTALLATIONS For Landmark Projects



- Size Custom (Facade, Atrium, Monuments)
- Volume 1000-10000+ Liters
- Best For Smart Cities, Airports, Corporates, Developers

Price Range: ₹20,00,000 - ₹2 Crore+

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WHERE CAN YOU USE IT? (DOMESTIC & COMMERCIAL PLACES)

SCHOOLS



- STEM Education
- Biology Learning
- Sustainability Programs

Recommended Size
50-100 L Tower

Typical Price
₹75,000 - ₹1.5 Lakh

COLLEGES & UNIVERSITIES



- Research & Innovation
- Environmental Awareness
- Campus Attraction

Recommended Size
100-500 L Tower / Wall

Typical Price
₹1 Lakh - ₹5 Lakh

HOSPITALS



- Biophilic Design
- Healing Environment
- Sustainability Goals

Recommended Size
100-300 L Tower

Typical Price
₹1 Lakh - ₹3 Lakh

IT PARKS & OFFICES



- ESG & Green Building Goals
- Employee Well-being
- Corporate Branding

Recommended Size
200-1000 L Tower / Wall

Typical Price
₹2 Lakh - ₹15 Lakh

SHOPPING MALLS



- Eye-catching Display
- Sustainability Branding
- Social Media Attraction

Recommended Size
200-2000 L Wall / Tower

Typical Price
₹5 Lakh - ₹25 Lakh

AIRPORTS & METRO



- Green Infrastructure
- Passenger Experience
- Smart City Initiative

Recommended Size
1000-5000 L Wall / Tower

Typical Price
₹10 Lakh - ₹1 Crore+

HOTELS & RESORTS



- Lobby & Reception
- Luxury Ambiance
- Eco-friendly Positioning

Recommended Size
100-500 L Tower

Typical Price
₹1 Lakh - ₹5 Lakh

REAL ESTATE DEVELOPERS



- Project Differentiation
- Premium Amenities
- Better Brand Image

Recommended Size
Custom Installations

Typical Price
₹5 Lakh - ₹50 Lakh+

HOW BIG? HOW MUCH CAPACITY?

Product	Diameter	Height	Volume (Approx.)	Best Use
Desktop	6-8 inch	18-36 inch	8 - 20 Liters	Homes, Desks, Small Offices
Floor Tower	12-18 inch	4-6 ft	80 - 250 Liters	Schools, Hospitals, Hotels, Offices
Wall Panel	4-6 ft (W)	4-8 ft (H)	200 - 1000 Liters	IT Parks, Malls, Airports, Universities
Architectural Installation	Custom	Custom	1000 - 10000+ Liters	Landmarks, Airports, Smart City Projects

Larger volume = More algae = More CO₂ absorption & oxygen production

MARKET OPPORTUNITY IN INDIA

Segment	Potential Buyers	Market Size (India)	Growth Potential	WHY THE MARKET IS STRONG?
Schools (CBSE, ICSE, State)	2.5+ Lakh Schools	Huge	★★★★★	✓ Rising focus on sustainability & ESG
Colleges & Universities	40,000+ Institutions	Huge	★★★★★	✓ Green building certifications
Hospitals & Clinics	1.5+ Lakh Hospitals	Large	★★★★★	✓ Biophilic design is the future
IT Parks & Corporate Offices	1000+ IT Parks	Huge	★★★★★	✓ Education & awareness driving demand
Shopping Malls	800+ Malls	Large	★★★★★	✓ Great for brand image & CSR
Airports & Metro Stations	30+ Airports, 100+ Metro	Large	★★★★★	
Hotels & Resorts	50,000+ Hotels	Large	★★★★★	
Real Estate Projects	Top 100+ Developers	Huge	★★★★★	
Govt. Buildings & Smart Cities	State & City Projects	Large	★★★★★	

REVENUE OPPORTUNITY EXAMPLE (TO 10 CRORE IN 2 YEARS)

Product	Units to Sell (2 Years)	Avg. Selling Price	Revenue
Desktop	2,000	₹15,000	₹3.0 Crore
Floor Tower	300	₹1,00,000	₹3.0 Crore
Wall Panel	40	₹5,00,000	₹2.0 Crore
Architectural Installations	4	₹50,00,000	₹2.0 Crore

TOTAL REVENUE POTENTIAL (2 YEARS) ≈ ₹10 CRORE

RECURRING REVENUE OPPORTUNITIES

- Algae Culture Refills
- Nutrient Solution Packs
- Maintenance & AMC Contracts
- Filters & Spare Parts
- Monitoring & IoT Services

Recurring revenue can contribute 15-30% extra income every year.

WHY CUSTOMERS BUY?

- ✓ Sustainability & ESG Goals
- ✓ Improves Air Quality
- ✓ Biophilic Design & Aesthetics
- ✓ Education & Awareness
- ✓ Brand Image & Differentiation
- ✓ Employee & Visitor Well-being

KEY ADVANTAGES OF LIQUID TREE



Converts CO₂ to Oxygen



Improves Indoor Air Quality



Low Power & Eco-friendly



Smart Monitoring (Optional)



Beautiful Living Ecosystem

IDEAL BUSINESS STRATEGY



A SMALL REACTOR TODAY, A GREENER PLANET TOMORROW.

Clean Air • Green Technology • Better Future



LIQUID TREE

SMART ALGAE BIOREACTOR

A LIVING SOLUTION FOR A GREENER TOMORROW

We design and build smart algae bioreactors that convert CO₂ into oxygen, improve air quality and bring sustainability to every space.



Captures CO₂



Releases Oxygen



Improves Air Quality



Supports Sustainability

RECOMMENDED INITIAL CAPITAL

Bootstrap

₹15 – 20 Lakh



Serious Startup

₹35 – 50 Lakh



Aggressive Growth

₹75 Lakh – ₹1.5 Cr



RECOMMENDED BUDGET TO START: ₹40 LAKH



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PRODUCT LINE ROADMAP

1. DESKTOP

For Personal / Office Desk



6-8" Dia
18-36" Height
8-20 Liters

₹10,000 – ₹30,000

2. FLOOR TOWER

For Open Spaces



12-18" Dia
4-6 ft Height
80-250 Liters

₹50,000 – ₹2,00,000

3. WALL PANEL

For Walls & Big Impact



4x4 ft to 6x8 ft
200-1000 Liters

₹2,00,000 – ₹15,00,000

4. ARCHITECTURAL INSTALLATIONS

For Landmark Projects



Custom (Facade, Atrium, Monuments)
1000-10000+ Liters

₹20,00,000 – ₹2 Crore+

WHERE CAN YOU USE IT? (DOMESTIC & COMMERCIAL MARKETS)

Schools



- STEM Education
- Biology Learning
- Sustainability Programs

Colleges & Universities



- Research & Innovation
- Environmental Awareness

Hospitals



- Biophilic Design
- Healing
- Environment
- Sustainability Goals

IT Parks & Offices



- ESG Goals
- Employee Well-being
- Branding & Green Initiatives

Shopping Malls



- Eye-catching Display
- Sustainability Branding

Airports & Metro



- Green Infrastructure
- Passenger Experience

Hotels & Resorts



- Luxury
- Ambiance
- Eco-friendly Positioning

Real Estate Developers



- Project Differentiation
- Premium Amenities

Why these markets?

✔ Strong sustainability focus

✔ Budget for green initiatives

✔ High visibility & branding value

✔ Long-term impact & CSR alignment

PHASE-BY-PHASE PROJECT PLAN (24 MONTH ROADMAP)

1 RESEARCH & PROTOTYPE Month 1 – 3

Objectives

- Build MVP
- Validate algae growth
- Validate electronics
- Build brand concept

Key Expenses

Product design	₹1,00,000
Prototype tooling	₹1,50,000
Electronics dev.	₹2,00,000
PCB development	₹50,000
Algae culture setup	₹50,000
Testing equipment	₹1,00,000
Website & branding	₹1,00,000

Total: ₹7 – 8 Lakh

Deliverables

- 5-10 Working Prototypes
- Oxygen/CO₂ Test Data
- Product Renders
- Website & Brand Identity



2 PILOT PRODUCTION Month 4 – 6

Objectives

- Produce first 50-100 units
- Gather customer feedback
- Refine design

Key Expenses

Manufacturing setup	₹2,00,000
Inventory (parts)	₹4,00,000
Packaging	₹1,00,000
Quality testing	₹1,00,000
Certifications (basic)	₹2,00,000

Total: ₹10 Lakh

Deliverables

- 100 Units Produced
- Initial Customers
- Product Validation



3 MARKET LAUNCH Month 7 – 12

Objectives

- Launch e-commerce
- Generate traction
- Build brand awareness

Key Expenses

Digital marketing	₹5,00,000
Influencer marketing	₹2,00,000
PR & Media	₹1,00,000
Trade shows & events	₹2,00,000
Inventory	₹5,00,000

Total: ₹15 Lakh

Revenue Target

- 300 – 500 Units
- ASP: ₹15,000
- Revenue: ₹45 – 75 Lakh



4 TOWER PRODUCT DEVELOPMENT Month 12 – 15

Objectives

- Develop commercial tower product
- Target schools, offices, hotels, hospitals

Product: Floor Tower

- 100 – 250 Liters
- Height: 4 – 6 ft
- Selling Price: ₹75,000 – ₹2,00,000

Key Expenses

Engineering	₹3,00,000
Structural design	₹2,00,000
New tooling & molds	₹3,00,000

Total: ₹8 Lakh



5 B2B SALES EXPANSION Month 15 – 18

Objectives

- Enter B2B market
- Sell to institutions & corporates

Target Customers

Schools, Universities, Hospitals, IT Parks, Hotels, Corporates

Key Expenses

Sales team (salaries)	₹6,00,000
Demo units	₹3,00,000
Travel & meetings	₹1,00,000

Total: ₹10 Lakh

Revenue Goal

- 50 Towers x ₹1,00,000
- Revenue: ₹50 Lakh+



6 WALL PANEL PRODUCT Month 18 – 20

Objectives

- Develop wall bioreactor
- Target malls, offices, airports, builders

Product: Wall Panel

- 200 – 1000 Liters
- Size: 4x4 ft to 6x8 ft
- Price: ₹2 – ₹10 Lakh

Key Expenses

Design & engineering	₹3,00,000
Prototyping	₹4,00,000
Testing & validation	₹2,00,000

Total: ₹9 Lakh



7 LARGE COMMERCIAL PROJECTS Month 20 – 24

Objectives

- Win big projects
- Scale production
- Expand pan India

Target

IT Parks, Airports, Malls, Real Estate Developers, Smart City Projects

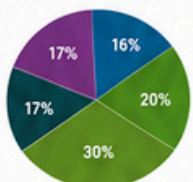
Sales Strategy

- One project value: ₹5 Lakh – ₹50 Lakh+
- Long term AMC & maintenance



FINANCIAL PLAN & REVENUE ROADMAP

INVESTMENT SUMMARY



- R&D & Prototyping (16%)
- Pilot Production (20%)
- Market Launch (30%)
- Product Development (17%)
- B2B Expansion (17%)

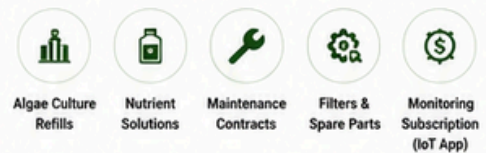
Total Investment Required: ₹50 – 60 Lakh

(Can be started with ₹25 – 40 Lakh using lean approach & pre-orders)

REVENUE OPPORTUNITY EXAMPLE (TO ACHIEVE ₹10 CRORE IN 2 YEARS)

Product	Units (2 Years)	Avg. Selling Price	Revenue
Desktop Units	2,000	₹15,000	₹3.00 Crore
Floor Towers	300	₹1,00,000	₹3.00 Crore
Wall Panels	40	₹5,00,000	₹2.00 Crore
Custom Installations	4	₹50,00,000	₹2.00 Crore
TOTAL REVENUE (2 YEARS)			₹10.00 CRORE

RECURRING REVENUE STREAMS



Recurring revenue can contribute 15% – 30% extra income every year.

TEAM PLAN

Month 1 – 6 Core Team (4)	Month 6 – 12 Team (7)	Month 12 – 24 Team (12 – 15)
• Founder / CEO	• Marketing Manager	• Sales Manager
• Product Engineer	• + 2 Assembly Technicians	• + 2 B2B Sales Executives
• Electronics Engineer		• + 2 Service Engineers
• Designer		• + Operations Executive

KEY SUCCESS FACTORS

- ✔ Strong product design & reliability
- ✔ Beautiful & premium aesthetics
- ✔ Scientifically proven performance
- ✔ Target right markets with budgets
- ✔ ESG & sustainability positioning
- ✔ Excellent after-sales service
- ✔ Scalable manufacturing
- ✔ Recurring revenue model

USE CASE IMPACT

- ✔ Converts CO₂ into Oxygen
- ✔ Improves Indoor Air Quality
- ✔ Biophilic Design & Well-being
- ✔ Supports ESG & Green Certifications
- ✔ Educational & Awareness Tool
- ✔ Great for Brand Image & CSR

WHY INVEST IN LIQUID TREE?

- High growth green-tech market
- Multiple product lines
- High margin potential
- Scalable & global opportunity
- Builds a sustainable future



START SMALL. THINK BIG. GROW GREEN.



Clean Air



Green Technology



Better Future



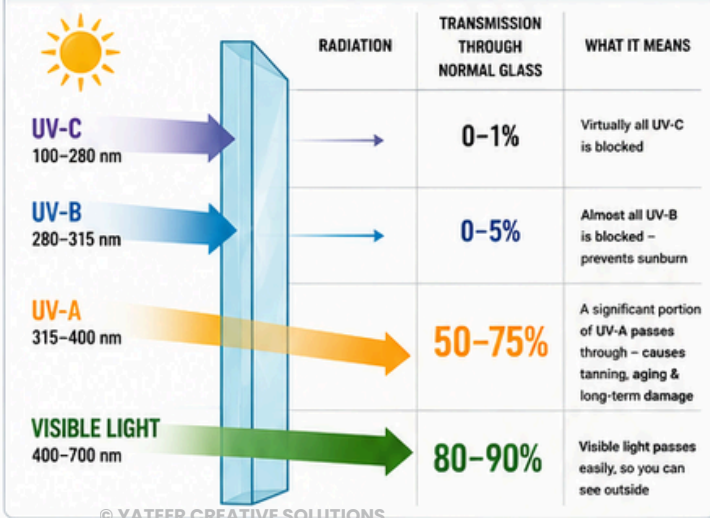
Sustainable Planet

UV RAYS & GLASS

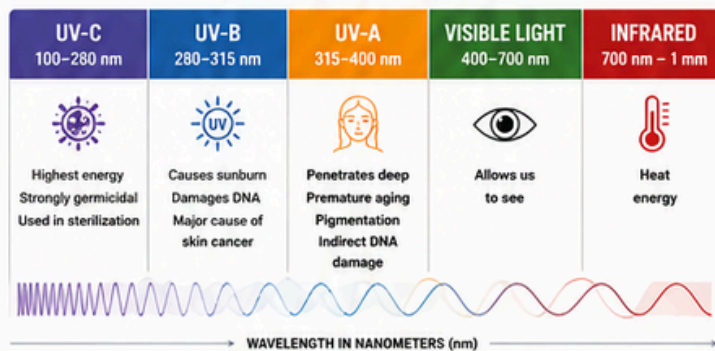
WHAT PASSES, WHAT'S BLOCKED, AND WHY IT MATTERS

Normal, plain window glass (soda-lime glass) blocks almost all UV-B and UV-C light, but it allows a significant portion of UV-A rays to pass through. You can still experience tanning or long-term skin aging while indoors or driving.

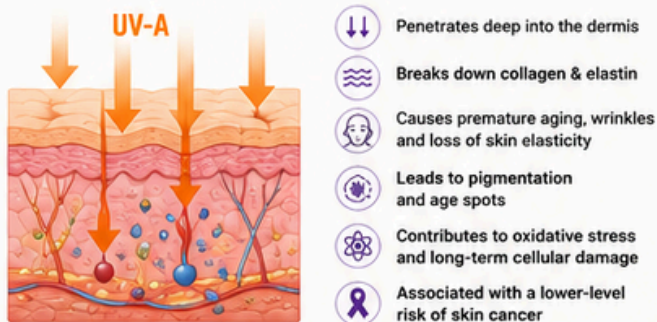
HOW NORMAL SODA-LIME WINDOW GLASS HANDLES UV LIGHT



THE UV SPECTRUM AT A GLANCE



HEALTH IMPACT OF UV-A EXPOSURE (THROUGH GLASS)



IMPORTANT EXCEPTIONS & VARIATIONS

CAR WINDSHIELDS



Made of laminated glass (glass + PVB interlayer). Blocks most UV-A rays.

UV-A BLOCKING: 95-99%

CAR SIDE & REAR WINDOWS



Usually tempered glass. Does not block UV-A effectively.

UV-A BLOCKING: 30-60%

SPECIALIZED GLASS



Polycarbonate lenses and specially treated windows block 100% of UV rays (UV-A, UV-B, UV-C).

UV BLOCKING: ~100%

QUARTZ GLASS



Used in lamps and scientific equipment. Highly transparent to all UV light, including UV-C.

UV TRANSMISSION: VERY HIGH

LOW-E / UV-PROTECTIVE GLASS



Coatings or interlayers reduce UV and heat transmission significantly.

UV-A BLOCKING: 70-99%

UV TRANSMISSION COMPARISON (TYPICAL VALUES)

GLASS TYPE	DESCRIPTION	UV TRANSMISSION (%)			VISIBLE LIGHT 400-700 nm
		UV-C 100-280 nm	UV-B 280-315 nm	UV-A 315-400 nm	
Soda-Lime (Normal Window Glass)	Standard windows	0-1%	0-5%	50-75%	80-90%
Tempered Glass (Side Car Window)	Safety glass in cars	0-1%	0-5%	30-60%	80-90%
Laminated Glass (Windshield)	Glass + PVB interlayer	0-1%	0-5%	1-5%	70-85%
Low-E Glass	Coated for energy efficiency	0-1%	0-5%	10-30%	60-80%
UV-Protective / Laminated	Special UV blocking layers	0-1%	0-1%	<1-5%	70-80%
Quartz Glass	High purity silica glass	>90%	>90%	>90%	>90%

Note: Values vary by manufacturer, thickness, and coating.

WHERE YOU CAN STILL GET UV-A EXPOSURE



Homes

Sitting near sunlit windows



Offices

Long hours near large glass areas



Cars

Especially from side windows



Buildings & Malls

Large skylights and glass facades

DID YOU KNOW?

People who drive for long periods often show more sun damage on the left side of the face and arm (in countries where the driver sits on the left side).



PROTECT YOURSELF: SMART SOLUTIONS



UV-BLOCKING WINDOW FILMS

Blocks 95-99% of UV rays. Reduces heat and glare too.



LAMINATED / UV PROTECTIVE GLASS

Best for homes, offices, skylights, and vehicles.



WEAR UV-BLOCKING SUNGLASSES

Protects eyes from UV-A and UV-B radiation.



USE BROAD-SPECTRUM SUNSCREEN

Protects skin even when you are indoors or driving.



AVOID DIRECT SUN DURING PEAK HOURS

10 AM - 4 PM is when UV rays are strongest.

GLASS MANUFACTURING: HOW WINDSHIELD GLASS PROTECTS DRIVERS



BENEFITS: Safety in collisions • High strength • UV protection • Noise reduction

UV-A vs UV-B: KEY DIFFERENCES



UV-B

- Higher energy
- Causes sunburn
- Does not penetrate deeply
- Major cause of skin cancer



UV-A

- Lower energy
- Penetrates deep into the skin
- Causes aging, tanning, pigmentation
- Contributes to long-term skin damage

THE BOTTOM LINE



Glass protects you from sunburn but not from aging. UV-A rays can reach you indoors and in your car. Stay protected!

KEY TAKEAWAYS

- ✓ Normal window glass blocks almost all UV-B & UV-C.
- ✓ It allows 50-75% of UV-A rays to pass through.
- ✓ UV-A causes tanning, premature aging, pigmentation and long-term damage.
- ✓ Windshields block ~95-99% of UV-A, but side & rear car windows do not.
- ✓ Use UV-blocking films, protective glass, sunglasses and sunscreen for full protection.



PROTECT TODAY, PREVENT TOMORROW.

UV-A is invisible. The damage is real.



Protect Your Skin



Protect Your Eyes

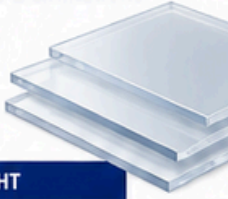


Protect Your Future

IPLEXI GLASS (ACRYLIC) & UV PROTECTION

How Plexiglass Handles UV Light, Its Benefits, Uses & Limitations

Plexiglass, also known as acrylic (PMMA – Polymethyl Methacrylate), is a strong, lightweight and transparent thermoplastic widely used as a glass alternative. It offers some natural UV blocking, but not complete protection—especially against UV-A rays.

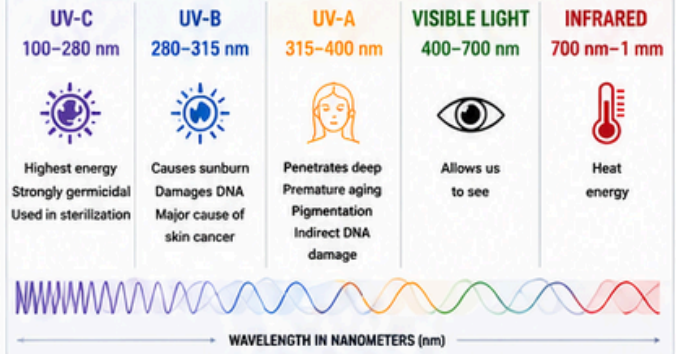


HOW PLEXIGLASS (ACRYLIC) HANDLES UV LIGHT

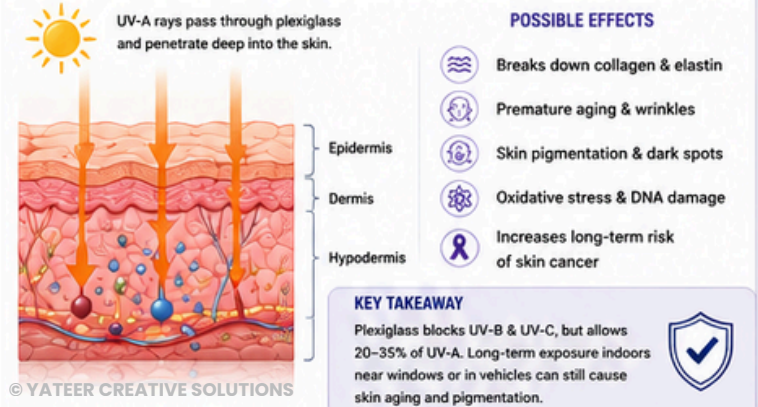
RADIATION	WAVELENGTH (nm)	TRANSMISSION THROUGH PLEXIGLASS (ACRYLIC)	WHAT IT MEANS
UV-C	100–280	<0.1%	Virtually all UV-C is blocked.
UV-B	280–315	<1%	Almost all UV-B is blocked. Helps prevent sunburn indoors.
UV-A	315–400	20–35%	A significant portion of UV-A passes through. Can cause tanning, aging & long-term damage.
VISIBLE LIGHT	400–700	92–93%	High clarity. Allows excellent visibility.
INFRARED	700 nm–1 mm	85–90%	Infrared heat passes through easily.

Values are typical for clear cast acrylic sheet (~3 mm thick). Transmission varies with thickness, color, and additives.

UV SPECTRUM AT A GLANCE



UV-A EXPOSURE THROUGH PLEXIGLASS



IMPORTANT EXCEPTIONS & VARIATIONS

AUTOMOTIVE USE	UV-RESISTANT ACRYLIC	ACRYLIC SHEET COLORS	COATED / FILM TREATED	POLYCARBONATE vs ACRYLIC	QUARTZ GLASS (NOT ACRYLIC)
 Car windshields (laminated glass) block most UV-A rays. Standard side & rear windows (tempered glass or acrylic) allow more UV-A.	 Special grades of acrylic sheets with UV inhibitors can block up to 90–98% UV-A. UV-A BLOCKING: 90–98%	 Darker or tinted acrylic reduces UV transmission further, depending on the color. UV-A BLOCKING: 50–90%	 UV-blocking coatings or films can be applied to acrylic for near 100% UV protection. UV-A BLOCKING: ~100%	 Polycarbonate offers better impact resistance and naturally blocks more UV. UV-A BLOCKING (PC): 100%+ UV-A BLOCKING (ACRYLIC): 20–35%	 Quartz glass is highly transparent to all UV, including UV-C. Used in lamps & scientific equipment. UV TRANSMISSION: VERY HIGH

UV TRANSMISSION COMPARISON (TYPICAL VALUES)

MATERIAL	TYPE / DESCRIPTION	UV TRANSMISSION (%)			VISIBLE LIGHT 400–700 nm
		UV-C 100–280 nm	UV-B 280–315 nm	UV-A 315–400 nm	
Plexiglass (Acrylic)	Clear Cast Acrylic (3 mm)	<0.1%	<1%	20–35%	92–93%
Polycarbonate	Clear Polycarbonate (3 mm)	<0.1%	<1%	<1%	88–90%
Glass (Soda-Lime)	Standard Window Glass (3 mm)	<0.1%	0–5%	50–75%	80–90%
Glass (Laminated)	Windshield (Laminated)	<0.1%	0–5%	1–5%	70–85%
Quartz Glass	High Purity Fused Quartz	>90%	>90%	>90%	>90%

Note: Values vary based on thickness, formulation, coatings and manufacturers.

WHERE YOU CAN STILL GET UV-A EXPOSURE THROUGH PLEXIGLASS

 Homes & Windows Sunlight through acrylic panels, skylights or large windows.	 Offices & Workspaces Sitting near acrylic dividers, windows or display enclosures.	 Vehicles & Boats Side windows, boat windscreens and enclosures may allow UV-A.	 Greenhouses & Domes Plant growth is good, but people inside can still be exposed to UV-A.
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HOW TO PROTECT YOURSELF WITH PLEXIGLASS

UV-Blocking Films	UV-Resistant Acrylic	Coatings	Sunscreen	Clothing & Shade	Smart Placement
 Apply UV-blocking films to block up to 99% of UV-A rays. BEST FOR: Retrofit Solution	 Choose acrylic sheets with built-in UV inhibitors for higher protection. BEST FOR: Long-term Use	 Hard coatings or UV-absorbing coatings reduce UV transmission. BEST FOR: High Durability	 Use broad-spectrum sunscreen for skin protection. BEST FOR: High Protection	 Wear protective clothing, hats and use shades when possible. BEST FOR: Prolonged Exposure	 Avoid sitting directly next to acrylic windows for long periods. BEST FOR: Homes & Offices

ADVANTAGES OF PLEXIGLASS

- ✓ High optical clarity (92–93%)
- ✓ Lightweight (half the weight of glass)
- ✓ High impact resistance (shatter-resistant)
- ✓ Easy to cut, shape & fabricate
- ✓ Blocks UV-B & UV-C almost completely
- ✓ Available in UV-resistant grades
- ✓ Cost-effective compared to glass

LIMITATIONS OF PLEXIGLASS

- ✗ Allows 20–35% UV-A transmission
- ✗ Scratches more easily than glass
- ✗ Lower heat resistance (softens ~105°C)
- ✗ Can yellow over time if not UV-stabilized
- ✗ Less chemical resistance than polycarbonate

COMMON APPLICATIONS

 Windows & Skylights	 Display Cases & Signage	 Safety Shields & Barriers	 Aquariums & Terrariums	 Greenhouses & Domes	 Vehicles, Boats & RVs
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KEY TAKEAWAYS

- ✓ Plexiglass blocks almost all UV-B & UV-C rays.
- ✓ It allows 20–35% of UV-A rays to pass through.
- ✓ UV-A can cause tanning, pigmentation and premature aging.
- ✓ For long-term protection, use UV-resistant acrylic, coatings, films or sunscreens.
- ✓ Choose the right material based on your application and level of UV protection needed.

BOTTOM LINE

Plexiglass is an excellent glass alternative for clarity, strength and safety. However, it does not provide complete UV protection. If you spend long hours near acrylic windows or enclosures, take extra measures to protect your skin and health.

STAY SMART. STAY PROTECTED.

This report provides a detailed comparison between Glass (Soda-Lime) and Plexiglass (Acrylic/PMMA) for use in **Water Terrarium Plants Box**, focusing on light transmission, photosynthesis efficiency, durability, safety, and overall suitability.



OVERALL GRADE
PLEXIGLASS (ACRYLIC)
IS BETTER FOR PHOTOSYNTHESIS



1. MATERIAL OVERVIEW

GLASS (SODA-LIME)



- Made from natural minerals (silica, soda, lime)
- Rigid, heavy & brittle
- Highly transparent
- Prone to breakage
- Can have green tint (in some types)
- Chemically inert

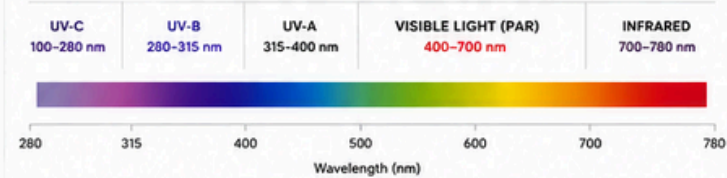
PLEXIGLASS (ACRYLIC/PMMA)



- Made from polymethyl methacrylate (PMMA)
- Lightweight, impact resistant
- Very high transparency
- Easy to cut, drill & shape
- Excellent UV transmission
- Less prone to breakage
- Good chemical resistance

2. LIGHT (PAR) TRANSMISSION – IDEAL FOR PHOTOSYNTHESIS

Photosynthetically Active Radiation (PAR): 400–700 nm



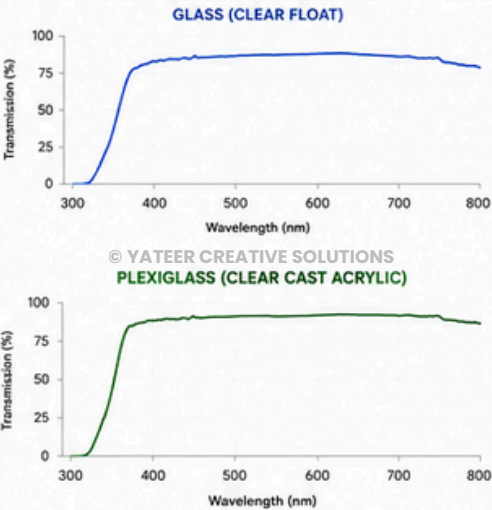
MATERIAL	AVERAGE PAR TRANSMISSION (%) (400–700 nm)	PHOTOSYNTHESIS EFFICIENCY
GLASS (Clear Float)	~80 – 90%	★★★★☆ Good
PLEXIGLASS (Acrylic) (Clear Cast)	~92 – 98%	★★★★★ Excellent

More PAR transmission = more light available for plant photosynthesis = better growth

3. DETAILED COMPARISON

FEATURE	GLASS	PLEXIGLASS (ACRYLIC)	BETTER FOR PLANTS BOX?
PAR (Visible Light) Transmission (400–700 nm)	80–90%	92–98%	✓ PLEXIGLASS
UV Transmission	Blocks almost all UV-B & UV-C ~50–75% UV-A passes	Blocks almost all UV-B & UV-C ~10–20% UV-A passes (with UV-A filter grade even less)	✓ PLEXIGLASS (slightly)
Clarity / Optical Quality	Very clear, no yellowing	Crystal clear (cast acrylic best), may yellow over many years	✓ GLASS (long term clarity)
PAR Consistency	Good	Excellent (higher & more uniform)	✓ PLEXIGLASS
Weight	Heavy	~50% lighter than glass	✓ PLEXIGLASS
Impact Resistance	Brittle, breaks easily	10–17x stronger than glass	✓ PLEXIGLASS
Heat Insulation	Moderate	Better (retains stable temperature)	✓ PLEXIGLASS
Scratch Resistance	High	Lower (scratches easier)	⌚ GLASS
Chemical Resistance	Excellent (inert)	Very good (resistant to most chemicals)	⌚ GLASS (slightly)
Longevity in Water	Can last decades	10–15+ years (cast grade), avoid harsh cleaners	⌚ GLASS (slightly)
Cost (for same size)	Moderate to High	Lower to Moderate	✓ PLEXIGLASS
Ease of Fabrication	Needs cutting, polishing, special tools	Easy to cut, drill, bend, thermoform, glue	✓ PLEXIGLASS
Safety	Sharp breakage	Does not shatter (safer)	✓ PLEXIGLASS
Overall for Photosynthesis	★★★★☆ Good	★★★★★ Excellent	✓ PLEXIGLASS

4. SPECTRAL TRANSMISSION CURVES



Plexiglass transmits more light in the 400–700 nm (PAR) range where plants perform photosynthesis.

5. FOR WATER TERRARIUM PLANTS BOX – WHY IT MATTERS



- More PAR = Faster photosynthesis = Better oxygen production
- Stronger, safer material = Long term durability
- Better thermal insulation = Stable temperature = Healthy ecosystem
- Lighter material = Easy to handle & install
- Clear visibility = Enjoy your aquascape
- Less breakage risk = Safety for home, office, schools & retail use

6. SUMMARY

GLASS	PLEXIGLASS (ACRYLIC)
- Very good clarity - Excellent scratch resistance - Chemically inert - Heavier & brittle - Slightly lower PAR transmission	- Higher PAR transmission - Lighter & stronger - Better impact resistance - Easier to fabricate - Slight yellowing over years (use cast grade for long life)
RECOMMENDATION: For maximum photosynthesis and overall performance in a Water Terrarium Plants Box, PLEXIGLASS (CAST ACRYLIC) is the better overall choice.	

7. BEST GRADE RECOMMENDATION

Choose **CAST ACRYLIC** (not extruded) for best clarity & light transmission.

- Thickness: 5mm – 10mm (side panels), 8mm – 12mm (front panel)
- Color: Clear (transparent)
- UV Protection: Good (blocks UV-B & most UV-C)
- Light Transmission (PAR): 92 – 98%
- Water Compatibility: Excellent
- Brand Examples: Mitsubishi, Lucite, Evonik, Röhm Plexiglas (cast grade)



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ALGAE TREE – PATENT INFORMATION

Innovating for Cleaner Air. Powered by Algae.



1 IS "LIQUID TREE" PATENTED?

The Serbian LIQUID3 (Liquid Tree) project was developed by the University of Belgrade – Institute for Multidisciplinary Research and is described as intellectual property owned by the institute.



The official project website states that LIQUID3 is an exclusive property of the institute and warns against unauthorized copying and false collaborators.
– liquid3.rs



However, we could not find a publicly disclosed patent specifically titled "Liquid3" or "Liquid Tree".

That does NOT necessarily mean no patent exists.

It may be:

- Filed under a different title
- Protected through design rights, trademarks, know-how, or trade secrets
- Pending in certain jurisdictions
- Or not yet publicly disclosed



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ALGAE TREE BENEFITS



CO₂ ABSORPTION

Captures CO₂ and other greenhouse gases



O₂ GENERATION

Produces oxygen for cleaner air



AIR POLLUTION REDUCTION

Reduces PM2.5, PM10 and harmful pollutants



BIOMASS PRODUCTION

Generates useful algae biomass



URBAN SUSTAINABILITY

Enhances green cover and supports smart cities

2 CLOSELY RELATED ALGAE PHOTOBIOREACTOR PATENTS

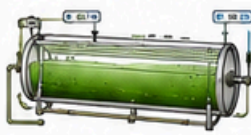
A SYSTEMS AND METHODS FOR CULTIVATING ALGAE



Patent No.: US 11,459,535 B2
Assignee: University of South Florida
Filed: 2016 | Granted: 2022

- Closed transparent photobioreactor
- Algae cultivation chamber
- CO₂ absorption
- Oxygen generation
- Floating and orientation control systems

B SYSTEMS AND METHODS FOR CULTIVATING ALGAE (CONTINUATION)



Patent No.: US 12,031,121 B2
Assignee: University of South Florida
Filed: – | Granted: 2024

- Enhanced algae cultivation efficiency
- Improved photobioreactor configuration
- Better scalability

C SYSTEMS FOR CULTIVATING AND DEWATERING ALGAE



Patent No.: US 10,633,628 B2
Assignee: University of South Florida
Filed: – | Granted: 2020

- Transparent algae growth chamber
- Nutrient transfer membrane
- Gas control system
- Automated dewatering of algae biomass

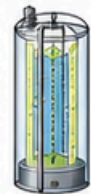
D PHOTOBIOREACTOR FOR CO₂ BIOSEQUESTRATION



Patent App.: 20160115431A1
Assignee: –
Filed: 2016 | Pub.: 2016

- CO₂ capture
- Immobilized algae/cyanobacteria
- Artificial light delivery system
- Carbon sequestration

E PHOTOBIOREACTOR



Patent No.: US 10,407,653 B2
Assignee: –
Filed: 2017 | Granted: 2019

- Internal illumination system
- Biomass circulation
- Algae growth optimization
- Enhanced photosynthesis efficiency

3 WHAT MAKES AN ALGAE TREE PATENTABLE?

Patents are generally granted for innovations such as:



Photobioreactor Design
Tank geometry, transparent panels



Nutrient Delivery
Automated nutrient dosing



Air Circulation
CO₂ intake systems



Monitoring Systems
pH, temperature, CO₂ sensors



Lighting Systems
LED growth lighting



Urban Integration
Bench + charger + air purifier combinations



Algae Harvesting
Biomass extraction



Smart & Control Systems
Automation, IoT, data analytics

4 CAN YOU BUILD YOUR OWN ALGAE TREE IN INDIA?



Yes, in principle.

Basic algae photobioreactor concepts are well known and many patents have expired or cover specific implementations rather than the general idea.

However, if you intend to commercialize a product similar to LIQUID3, you would need:

- ✓ Patent landscape analysis
- ✓ Freedom-to-operate (FTO) review
- ✓ Design-around strategy
- ✓ Indian patent search through IP India Patent Search iprsearch.ipindia.gov.in



5 FOR YOUR "LIQUID TREE PROJECT"

Since you previously mentioned a Liquid Tree Project under Yateer, there is significant opportunity to develop a **NEW PATENTABLE INDIAN VERSION** by adding:



IoT Monitoring



Solar-Powered Operation



Native Indian Microalgae Strains



PM2.5 & PM10 Filtration



Smart City Integration



Digital Advertising Display



Public Seating & Charging Station



Rainwater Harvesting



Carbon Credit Measurement

These additions could potentially support filing:



Indian Patent



Design Registration



Trademark



International PCT Application

and create a defensible intellectual-property acquisition distinct from existing algae photobioreactor patents.



SUGGESTION

Before investing in prototyping, conduct a professional patentability and freedom-to-operate search across India, the US, Europe, and WIPO databases. This can identify gaps where a uniquely Indian, smart-city-oriented algae tree system could be patented.





INDIAN ORGANIZATIONS WITH ALGAE-RELATED PATENTS



Innovating with Algae. Powering a Sustainable India. 

© YATEER CREATIVE SOLUTIONS

 Organization	 Patent Title / Technology	 Patent Number	 Patent Type & Status	 Key Details
1  Reliance Industries Limited  Mumbai, Maharashtra	Algal cultivation system and biomass production Systems and methods for cultivating microalgae and producing biomass for various applications. 	Patent Application Number: US 2020/0385662 A1 (Published) Priority Date: 17 June 2020	 Patent Application (Published) International (USPTO)	- Algae cultivation using photobioreactors. - Enhanced biomass productivity. - Applications in biofuels, biochemicals, feed and nutrition.
2  CSIR-CFTRI (Council of Scientific & Industrial Research – Central Food Technological Research Institute)  Mysuru, Karnataka	Process for production of carotenoid from microalgae A process for cultivating microalgae and extracting carotenoids using a cost-effective method. 	Indian Patent Number: IN241826 Filing Date: 14 March 2012 Date of Grant: 24 July 2015	 Indian Patent Granted	- Microalgae cultivation process. - Extraction of carotenoids (valuable nutraceutical compounds). - Applications in food, pharma and cosmetics.
3  Prakash Tarun Kumar Independent Inventor  Chennai, Tamil Nadu	Photobioreactor design for low-cost algae biodiesel A low-cost, efficient photobioreactor for cultivating algae for biodiesel production. 	PCT Application Number: PCT/IN2015/000295 Publication Number: WO 2016/013025 A3 Filing Date: 14 July 2015	 PCT Application (Published) (Patent Cooperation Treaty – International)	- Closed photobioreactor system. - Efficient CO₂ utilization and algae growth. - Modular, scalable and low-cost design.
4  MUSHROOM WORLD (Mushroom World Group)  Pune, Maharashtra	AlgaeTree® System (Urban Algae Based Air Purification) Microalgae based system for carbon capture, oxygen generation and urban air purification. 	No specific patent number found (Publicly) Technology in commercial use	 No publicly verified patent identified yet (Commercial Deployment)	- AlgaeTree installations across India. - Solar powered, CO₂ absorption & O₂ generation. - Focus on smart cities and clean air solutions.

SUMMARY OF INDIAN ALGAE-RELATED PATENTS



4+

Indian organizations with algae-related patents/applications



3

Granted Indian Patents



2+

International/PCT Patent Applications



Key Focus Areas

- Algae cultivation
- Photobioreactor design
- Biofuel & bioproducts
- Carotenoids & nutraceuticals
- Carbon capture & air purification



 Note: Patent status and details are based on publicly available data up to May 2024. For legal or commercial use, please verify through the Indian Patent Office (ipindia.gov.in).



OPPORTUNITY FOR INNOVATORS & STARTUPS

There is a significant gap in India for a patent covering a complete Smart Urban Algae Tree Platform that integrates:



Modular Algae Photobioreactor



Solar Powered Operation



IoT & AQI Monitoring



PM2.5 / PM10 Filtration



Public Seating & Charging Station



Rainwater Harvesting



Carbon Credit Measurement



Smart City Dashboard Integration

Recommended IP Protection for Your Innovation

- ✓ Utility Patent (India)
- ✓ Industrial Design Registration
- ✓ Trademark for Product/Brand
- ✓ PCT Filing for Global Protection



Innovate Today. Protect Tomorrow. Build a Cleaner, Smarter India.

ALGAE TREE

PATENT OPPORTUNITIES

for YATEER

Innovate • Patent • Protect • Profit • Impact

Algae Tree is a smart, sustainable urban infrastructure that purifies air, generates oxygen and creates long-term environmental & commercial value.

WHY ALGAE TREE?



O₂
OXYGEN GENERATED

CO₂
CARBON ABSORBED

TOP PATENT OPPORTUNITIES IN ALGAE TREE

1 SMART ALGAE TREE INTEGRATED SYSTEM



Integrated algae photobioreactor with IoT, AQI sensors, solar power, smart control & urban furniture.

PATENTABILITY



RATING
9.5/10

2 MODULAR ALGAE PHOTOBIOREACTOR DESIGN



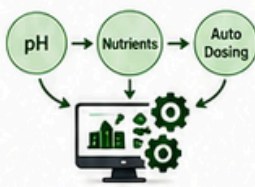
Modular, scalable & maintenance-friendly photobioreactor system.

PATENTABILITY



RATING
9/10

3 SMART NUTRIENT DOSING & AUTO MAINTENANCE SYSTEM



Automated nutrient delivery, pH control & self-cleaning mechanism.

PATENTABILITY



RATING
8.5/10

4 AI-POWERED ALGAE TREE MONITORING PLATFORM



AI & IoT based monitoring, predictive maintenance & performance optimization.

PATENTABILITY



RATING
9/10

5 INTEGRATED URBAN FURNITURE + ALGAE TREE



Combination of algae tree with seating, charging, lighting & advertising display.

PATENTABILITY



RATING
9/10

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MARKET PRICE RANGE (Per Unit)



₹1.75 Lakhs
– ₹4.50 Lakhs
(Installed Unit)

Basic Model:
₹1.75 – ₹2.50 Lakhs
Premium Smart Model:
₹3.00 – ₹4.50 Lakhs

REVENUE & PROFIT POTENTIAL (Per Unit)



Estimated Annual Revenue
(per unit through ads, CSR,
carbon credits, maintenance)

₹40,000 – ₹1,20,000+

Gross Profit Margin
30% – 45%

TARGET CUSTOMERS

- Smart City Corporations
- Airports & Metro Stations
- IT Parks & Corporates
- Educational Institutions
- Hospitals & Malls
- Tourist Places & Public Spaces

KEY BENEFITS

- ✓ Patented Technology Advantage
- ✓ High Scalability
- ✓ Government & CSR Funding
- ✓ Advertising Revenue
- ✓ Carbon Credit Earnings
- ✓ Low Maintenance Cost
- ✓ Strong Environmental Impact

DEVELOPMENT & COMMERCIALIZATION TIMELINE



INVESTMENT PER UNIT
(ESTIMATED)
₹1.00 – ₹1.80 Lakhs



PAYBACK PERIOD
(ESTIMATED)
12 – 18 Months



ROI (ESTIMATED)
(Per Unit / Year)
35% – 60%



SCALABILITY POTENTIAL
(5 YEARS)
10,000+ Units

Patents Today. Cleaner Tomorrow. Profits for Life.

ALGAE TREE PATENT OPPORTUNITIES

Innovate • Patent • Deploy • Profit

Turning Algae Technology into Profitable
Smart Environmental Infrastructure

1 CORE CONCEPT

Algae Tree is a smart photobioreactor system that uses microalgae to capture CO₂, produce oxygen, and improve air quality while delivering multiple urban benefits through intelligent integration.



CO₂
Absorption



O₂
Generation



Air Quality
Improvement



Sustainable
& Green



Smart City
Ready



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2 PATENT OPPORTUNITIES & RATINGS

Patent Opportunity Area	Description	Patentability Potential (1-10)
Integrated Algae Tree System Architecture	Combination of algae photobioreactor + air purification + smart urban furniture	9/10
Modular Photobioreactor Design	Unique modular tube configuration, light optimization + fluid flow mechanism	8.5/10
Smart Control & IoT System	AI/IoT based monitoring, nutrient dosing, remote management & analytics	9/10
Self-Sustaining Energy System	Solar powered, energy management + storage integration	8/10
Urban Integration (Seating + Utility)	Public seating, charging ports, display integration with algae system	8.5/10
Maintenance & Cleaning Automation	Automated cleaning, biofilm control + system health management	8/10
Algae Strain Optimization for Urban Use	Selection & adaptation of high CO ₂ absorption & high biomass algae strains	7.5/10

3 ALGAE TREE PRODUCT VARIANTS

Variant	Best For	Key Features	Patent Potential	Opportunity Rating (1-10)
Urban Algae Tree (Flagship)	Parks, Streets, Smart Cities	Air Purifier, AQI Display, Seating, Solar Power, Charging, IoT	High	9.5
Algae Tree Bus Shelter	Bus Stops, Transport Hubs	Air Purification, Solar Roof, AQI Display, Digital Ads	High	9.0
Algae Tree Billboard	Highways, Commercial Areas	CO ₂ Absorption, Oxygen Generation, Digital Advertising	High	9.0
Mini Algae Tree (Portable)	Homes, Offices, Schools	Compact Design, Low Power, Air Quality Improvement	Medium	8.0

4 PRICE RANGE, REVENUE & PROFIT POTENTIAL

Variant	Estimated Selling Price Range (INR)	Est. Gross Profit Margin	Est. Annual Revenue Potential*	Est. Net Profit Potential*
Urban Algae Tree (Flagship)	₹4,50,000 – ₹7,50,000	45% – 55%	₹5 Cr – ₹20 Cr+	₹2.5 Cr – ₹10 Cr+
Algae Tree Bus Shelter	₹6,00,000 – ₹9,00,000	45% – 55%	₹8 Cr – ₹30 Cr+	₹3.5 Cr – ₹15 Cr+
Algae Tree Billboard	₹7,00,000 – ₹12,00,000	45% – 55%	₹10 Cr – ₹40 Cr+	₹4.5 Cr – ₹20 Cr+
Mini Algae Tree (Portable)	₹12,000 – ₹25,000	50% – 60%	₹2 Cr – ₹10 Cr+	₹1 Cr – ₹5 Cr+

*Based on deployment scale, city partnerships, CSR projects & advertising partnerships.



High Demand
Growing focus on clean air, net zero & smart cities

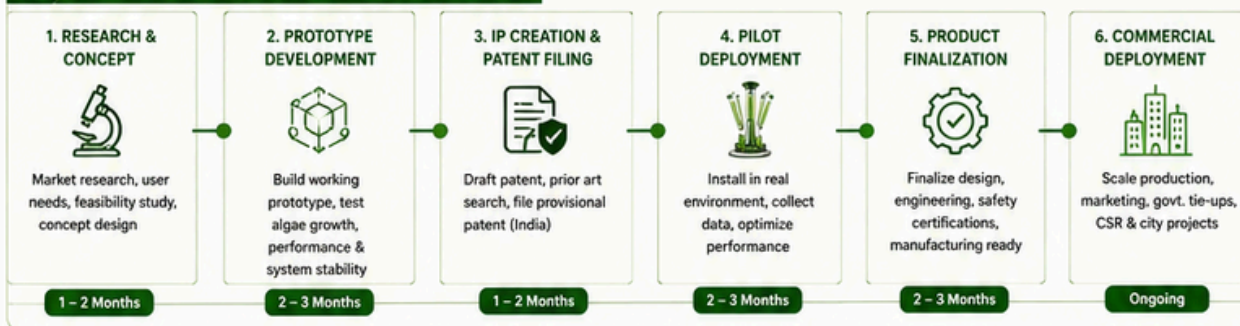


Multiple Revenue Streams
Sale + Ads + Data + Maintenance



Scalable & Repeatable
Easy to deploy, monitor & scale

5 DEVELOPMENT & PATENTING TIMELINE



TOTAL TIME TO
MARKET LAUNCH
~ 9 – 16
MONTHS

6 LONG-TERM IMPACT & PROFITABILITY

Environmental Impact Reduces CO ₂ , improves air quality, supports sustainability goals.	Massive Market Potential Smart cities, govt. projects, CSR funds, commercial advertising tie-ups.	High Profit Business Model Multiple revenue streams with high gross margins and recurring income.	Strong IP Moat Multiple patent layers create strong barrier to competition.	Scalable Nationwide & Global Modular design allows easy scaling across India & global markets.
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REVENUE STREAMS

- ✓ Product Sales
- ✓ Digital Advertising
- ✓ Data & Analytics (AQI)
- ✓ Maintenance Contracts
- ✓ Carbon Credit (Future)



Algae Technology. Smart Innovation. Sustainable Profits.

Clean Air Today, Better Tomorrow, Profitable Forever.

Note: Prices & revenues are indicative and may vary based on location, volume, and customization.

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HOW TO PATENT AN ALGAE TREE

PROCESS, TIME, COST & EVERYTHING EXPLAINED IN SIMPLE WORDS



A patent gives you the legal right to stop others from copying your unique invention for 20 years.

WHAT IS A PATENT?

A patent is a government grant that recognizes your invention as new, useful and not obvious, and gives you the exclusive right to make, use, sell or license it.



Your Idea. Your Right.
Your Future.

8 EASY STEPS TO GET A PATENT IN INDIA

1	2	3	4	5	6	7	8
IDEA VALIDATION	PROVISIONAL PATENT FILING	PROTOTYPE DEVELOPMENT	COMPLETE PATENT SPECIFICATION	PUBLICATION	EXAMINATION REQUEST	OBJECTIONS & RESPONSE	PATENT GRANTED
Search existing patents & check novelty. Identify what is truly new in your invention.	File a provisional application with concept, drawings & innovation details. Get "Patent Pending" status.	Build working model / MVP and refine your design and technology.	File the complete specification with detailed drawings, claims, components & working principles.	Patent application is published in the official journal.	Request examination. Patent office checks if the invention is new, useful and not obvious.	Examiner may raise objections. You (or your attorney) reply with clarifications and evidence.	If satisfied, the patent is granted. You get protection for your invention.
TIME 1 - 4 Weeks	TIME 1 - 2 Weeks	TIME 3 - 6 Months	TIME Within 12 months of provisional filing	TIME Normally: 18 Months (Fast Track: 1-6 Months)	TIME 6 - 24 Months	TIME 6 - 28 Months	TIME Total: 2 - 5 Years (Fast Track: 1 - 2 Years)
COST ₹10,000 - ₹50,000	COST ₹15,000 - ₹50,000*	COST ₹50,000 - ₹5,00,000+	COST ₹30,000 - ₹1,50,000	COST ₹2,500 - ₹10,000	COST ₹4,000 - ₹20,000	COST ₹10,000 - ₹1,00,000+	PROTECTION 20 Years from filing date

* Self filing cost - ₹1,600 (Government Fees) | Recommended through Patent Agent / Professional for better results.

TOTAL COST OVERVIEW (INDIA)

BUDGET ROUTE (Self Filing + Basic Help)	PROFESSIONAL ROUTE (Recommended)	PREMIUM ROUTE (Indian + International)
 ₹25,000 - ₹75,000	 ₹1.5 Lakhs - ₹4 Lakhs (Search + Drafting + Filing + Objection Handling)	 ₹5 Lakhs - ₹20 Lakhs+ (Includes PCT International Filing for Global Protection)

HOW MUCH TIME DOES IT TAKE?



Typical Time:	2 - 5 Years
Fast Track (Startup / India):	1 - 2 Years
Complex Cases:	5+ Years

Earlier you file, earlier your idea is safe!

PROTECT YOUR ALGAE TREE WITH 3 LAYERS OF IP PROTECTION

1 PATENT (Utility Patent)	2 DESIGN REGISTRATION	3 TRADEMARK	WHY THIS MATTERS?
 Protects the technology, system, process, working & innovation. Cost: ₹25,000 - ₹1.5 Lakhs+ Time: 2 - 5 Years Protection: 20 Years	 Protects the unique shape, appearance & structure. Cost: ₹10,000 - ₹30,000 Time: 3 - 6 Months Protection: 10 Years (renewable up to 15 Years)	 Protects your brand name, logo & identity. Cost: ₹4,500 - ₹15,000 Time: 6 - 12 Months Protection: 10 Years (renewable)	✓ Legal Ownership ✓ Market Advantage ✓ Investor Confidence ✓ Stops Copycats ✓ Higher Valuation ✓ Long-Term Business Security

SUGGESTED ROADMAP FOR YOUR ALGAE TREE PROJECT

MONTH 1	MONTH 2	MONTH 3 - 6	MONTH 6 - 8	MONTH 9	MONTH 12+	TOTAL INVESTMENT (For Patent Pending + Prototype)
 Patent Search & Concept Development Cost: ₹10k - ₹25k	 File Provisional Patent (Patent Pending) Cost: ₹15k - ₹50k	 Build Prototype & Testing Cost: ₹50k - ₹3L	 Pilot Installation & Field Testing Cost: ₹50k - ₹2L	 File Complete Patent Specification Cost: ₹30k - ₹1L	 Market Outreach, CSR, Smart City & Government Pitch Cost: Marketing	 ₹2 - ₹5 Lakhs (Initial Serious Investment)

POTENTIAL MARKET PRICES (ALGAE TREE PRODUCTS)

Mini Educational Unit (Schools / Colleges)	₹15,000 - ₹50,000
Office / Indoor Algae Tree	₹75,000 - ₹2 Lakhs
Smart City Algae Tree (Outdoor Unit)	₹3 Lakhs - ₹10 Lakhs
Algae Bus Shelter	₹8 Lakhs - ₹25 Lakhs
Algae Billboard	₹10 Lakhs - ₹50 Lakhs

POTENTIAL PROFITS



Example:
If you install 20 Smart City Algae Trees @ ₹5 Lakhs each

REVENUE = ₹1 CRORE

- + Maintenance Contracts
- + Data Services
- + Advertising Revenue
- + Carbon Credit Opportunities

HIGH REVENUE. RECURRING INCOME. BIG IMPACT.

KEY TAKEAWAY



Patent early.
Build smart.
Protect strong.
Scale big.

YATEER can become a leader in Smart Green Infrastructure with the right IP strategy.

INNOVATE TODAY. PATENT TOMORROW. LEAD THE GREEN CHANGE.



PROVISIONAL PATENT FOR YOUR ALGAE TREE PROJECT

Secure Today. Innovate Tomorrow. Own the Future.



WHAT IS A PROVISIONAL PATENT?

A provisional patent application is the first step to legally claim your invention. It gives you a priority date for 12 months while you refine, test and improve your product before filing the complete (non-provisional) patent application.



12 MONTHS

Think of it as **"BOOKING YOUR INVENTION'S DATE"**

Whoever files first, generally gets priority.

DOES IT APPLY TO ALGAE TREE PROJECT?

YES! Provisional patent is ideal for the Algae Tree. Your product is still evolving and you may upgrade:



Structure design



Sensors & features



Algae species



IoT & AI functionalities



Power system

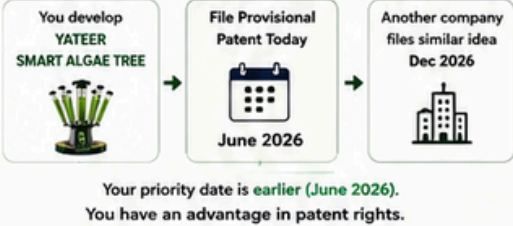


Revenue model



You don't need everything finalized. Document your idea and file early!

HOW IT WORKS – SIMPLE EXAMPLE



WHAT PROTECTION DOES IT GIVE?

PROVIDES

- ✓ Reserves your filing date
- ✓ Allows "Patent Pending" status
- ✓ Gives 12 months to improve your invention
- ✓ Helps attract investors & partners
- ✓ Strengthens your position in the market

DOES NOT PROVIDE

- ✗ It is NOT a granted patent
- ✗ Does NOT automatically stop competitors
- ✗ Must be converted into complete patent within 12 months

RIGHT TO USE



You can continue to work on, use, test and improve your invention.

But others can also use it unless you get the granted patent.

ADVANTAGES OF PROVISIONAL PATENT

- LOW COST** Much cheaper than full patent. Ideal for startups and innovators. ₹15,000 – ₹50,000
- QUICK FILING** Can be filed within 1–2 weeks with basic documentation. 1 – 2 Weeks
- SECURE PRIORITY DATE** First filer gets priority. Protects you from copycats.
- PATENT PENDING STATUS** Legally use "Patent Pending". Builds trust with investors & clients.
- TIME TO IMPROVE** You get 12 months to build prototype, test, and enhance your invention.
- ATTRACT INVESTORS & FUNDING** Increases value of your startup. Shows serious intent and IP ownership.
- REDUCES RISK** Secure your idea before spending lakhs on development & marketing.

DISADVANTAGES OF PROVISIONAL PATENT

- VALID ONLY FOR 12 MONTHS** You must file the complete patent within 12 months. Otherwise, you lose the priority benefit.
- NOT A GRANTED PATENT** It is only the first step, not the final protection. No legal monopoly yet.
- WEAK DOCUMENTATION = WEAK PROTECTION** If important features (AI, sensors, dashboard etc.) are not mentioned in provisional filing, you may not get priority for those later.
- ADDITIONAL COST LATER** You will still need to pay for complete patent filing, examination, and attorney responses.

BEST FOR:

- Startups
- New Product Ideas
- Prototype Stage
- Fundraising
- Government / CSR Projects
- Market Launch Preparation



WHAT SHOULD YATEER PATENT?

DON'T PATENT THIS

Only "Algae Tree" (Too Generic)



SMART URBAN ALGAE TREE SYSTEM (Combination of features)



This combination is novel and more likely to get patent protection.

PROVISIONAL PATENT – PROCESS & TIMELINE (INDIA)



TOTAL COST OVERVIEW (INDIA)

Budget Route (Self Filing + Basic Help)	₹25,000 – ₹75,000
Professional Route (Recommended)	₹1.5 Lakhs – ₹4 Lakhs
Premium Route (Indian + PCT International)	₹5 Lakhs – ₹20 Lakhs+

Note: Costs may vary based on complexity and professional fees.

RECOMMENDED INVESTMENT PLAN FOR YATEER

STAGE	ACTIVITY	EST. COST
Month 1	Patent Search & Concept	₹15K – ₹25K
Month 2	File Provisional Patent	₹25K – ₹50K
Month 3 – 8	Build Prototype & Testing	₹1L – ₹3L
Month 9 – 12	File Complete Patent	₹50K – ₹1.5L+

TOTAL INITIAL INVESTMENT: ₹2 – ₹5 LAKHS
(For serious prototype + patent pending status)

POTENTIAL MARKET PRICE (ALGAE TREE PRODUCTS)

Mini Educational Unit (Schools / Colleges)	₹15,000 – ₹50,000
Office / Indoor Algae Tree	₹75,000 – ₹2 Lakhs
Smart City Algae Tree (Outdoor Unit)	₹3 Lakhs – ₹10 Lakhs
Algae Bus Shelter	₹8 Lakhs – ₹25 Lakhs
Algae Billboard	₹10 Lakhs – ₹50 Lakhs

POTENTIAL RETURNS

Example:
If you install 20 Smart City Algae Trees @ ₹5 Lakhs each
REVENUE = ₹1 CRORE+

Plus:

- Maintenance Contracts
- Data & Analytics Services
- Advertising Revenue
- Carbon Credit Opportunities



KEY TAKEAWAY

File Provisional Patent Early, and safest way to protect your Algae Tree invention while you innovate.



BEFORE FILING, PREPARE A STRONG DOCUMENT

- ✓ Product concept drawings & 3D renders
- ✓ System architecture & components
- ✓ Working principle & process flow
- ✓ Unique features & advantages
- ✓ Implementation, maintenance & control system
- ✓ How it is different from existing solutions



REMEMBER

Provisional Patent is your first shield. Convert it into a strong patent within 12 months. Protect. Innovate. Lead. YATEER – Building a Greener Future!





A Smart First Step to Protect Your Innovation

WHAT IS A PROVISIONAL PATENT?

It is like booking your invention early with a priority date.

- ✓ You don't need a finished product
- ✓ You just describe your idea
- ✓ Reserves your filing date
- ✓ You get 12 months to improve
- ✓ You can use "Patent Pending"



It does NOT become a granted patent.
You must file a complete patent within 12 months.

DOES IT APPLY TO ALGAE TREE?

✓ YES

Perfect for projects
that are still evolving

- ✓ Design may change
- ✓ Sensors may change
- ✓ Features may evolve
- ✓ Technology may improve
- ✓ You need time to test

PATENT JOURNEY (India)



* Government fees ~₹1,600 if self filed | Recommended through Patent Agent/Professional for better results

COST OVERVIEW (India)

Budget Route (Self Filing + Basic Help)



₹25,000 - ₹75,000

Professional Route (Recommended)



₹1.5 Lakhs - ₹4 Lakhs

Premium Route (Indian + International)



₹5 Lakhs - ₹20 Lakhs+

HOW MUCH TIME DOES IT TAKE?



- Typical Time (India): 2 - 5 Years
- Fast Track (Startup / India): 1 - 2 Years
- Complex Cases: 5+ Years

Earlier you file,
earlier your
idea is safe!

ADVANTAGES OF PROVISIONAL PATENT

- ✓ Low cost & quick filing
- ✓ Secures Priority Date (first filer gets priority)
- ✓ Use "Patent Pending" legally
- ✓ 12 months to improve & test
- ✓ Attracts investors & partners
- ✓ Reduces risk of idea theft



DISADVANTAGES OF PROVISIONAL PATENT

- ✗ Valid only for 12 months
- ✗ Not a granted patent
- ✗ Does not automatically stop competitors
- ✗ Weak documentation = weak protection
- ✗ Cost for complete patent later
- ✗ Scope limited to what you describe



WHAT SHOULD YATEER PATENT?

Don't patent "Algae Tree".
Patent the UNIQUE SYSTEM.

- ✓ Photobioreactor + Algae Cultivation System
- ✓ AQI Monitoring & Data Analytics
- ✓ Solar Power & Energy Management
- ✓ IoT Dashboard & Remote Monitoring
- ✓ Smart Nutrient Dosing & Maintenance
- ✓ Public Furniture Integration (bench, shelter)
- ✓ Advertising Display & USB Charging
- ✓ Rainwater Harvesting & Sustainability



RECOMMENDED ROADMAP FOR YATEER



POTENTIAL MARKET PRICES (Algae Tree)

Mini Educational Unit	₹15K - ₹50K
Office / Indoor Algae Tree	₹75K - ₹2 Lakhs
Smart City Algae Tree	₹3Lakhs - ₹10 Lakhs
Algae Bus Shelter	₹8 Lakhs - ₹25 Lakhs
Algae Billboard	₹10 Lakhs - ₹50 Lakhs

PROFIT POTENTIAL

Example:
If you install 20 Smart City Algae Trees @ ₹5 Lakhs each
REVENUE = ₹1 CRORE+

- + Maintenance Contracts
- + Data Services
- + Advertising Revenue
- + Carbon Credit Opportunities

KEY TAKEAWAY

File Provisional early.
Build. Improve. Scale.
Protect. Profit.

YATEER can lead India in
Smart Green Infrastructure.

PROTECTION LAYERS

- 1 PATENT - Technology
- 2 DESIGN - Appearance
- 3 TRADEMARK - Brand

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