

# The "Micro-AC" Personal Cooling System

Revolutionizing personal cooling for India's humid climate with ultra-low power consumption and infrastructure-lite design

Prepared by: Denny Jacob | [denny.jacob@onlinetoolsx.com](mailto:denny.jacob@onlinetoolsx.com)



# The Cooling Gap

## Low-Tech Option

150W evaporative air coolers that fail in humid zones

## High-Energy Option

1,500W room ACs requiring heavy infrastructure

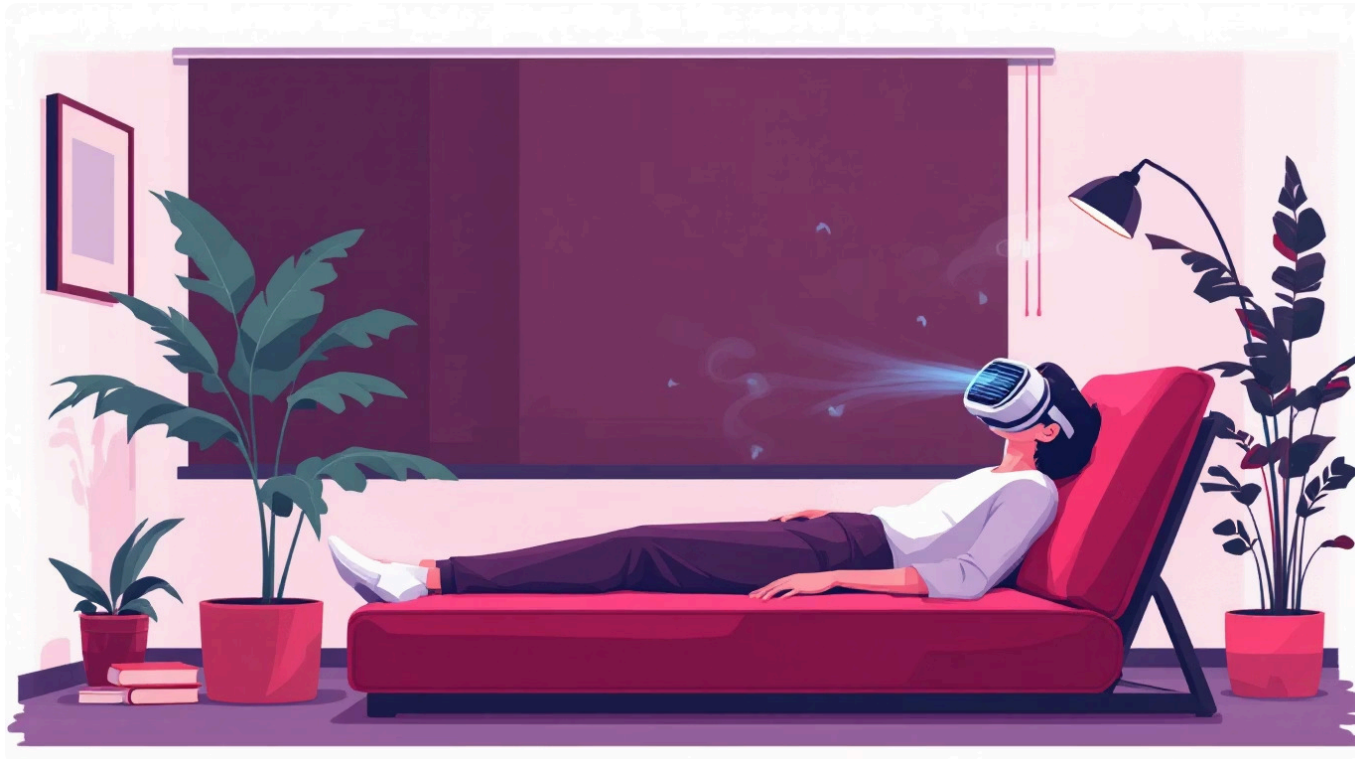
## Our Solution

200W personal cooler bridging the gap

India's cooling market is polarized, leaving a massive middle-ground unaddressed for 500 million Indians in humid coastal and monsoon zones.



# Category-Defining Features



## Personal Inverter-Compressor Cooler

- Consistent 25°C chilled, dry breeze
- 5-foot range for single user
- 200W power budget
- 1/10th electricity of traditional AC
- 5–8 hours on 800VA Home UPS

# Ultra-Low Power Consumption

**200W**

## Power Draw

Consumes 1/10th  
electricity of traditional  
AC

**0.2**

## Units/Hour

Less than 0.2 units per  
hour operation

**5-8**

## UPS Hours

Runs 5–8 hours on  
standard 800VA Home  
UPS

**1**

## Solar Panel

Compatible with single  
solar panel setup



# Dehumidification Advantage



## Air Cooler Failure

Increases humidity in 50% of India's geography



## Active Moisture Removal

Provides AC-grade comfort in any climate



## Universal Solution

Works in coastal, monsoon, and humid zones

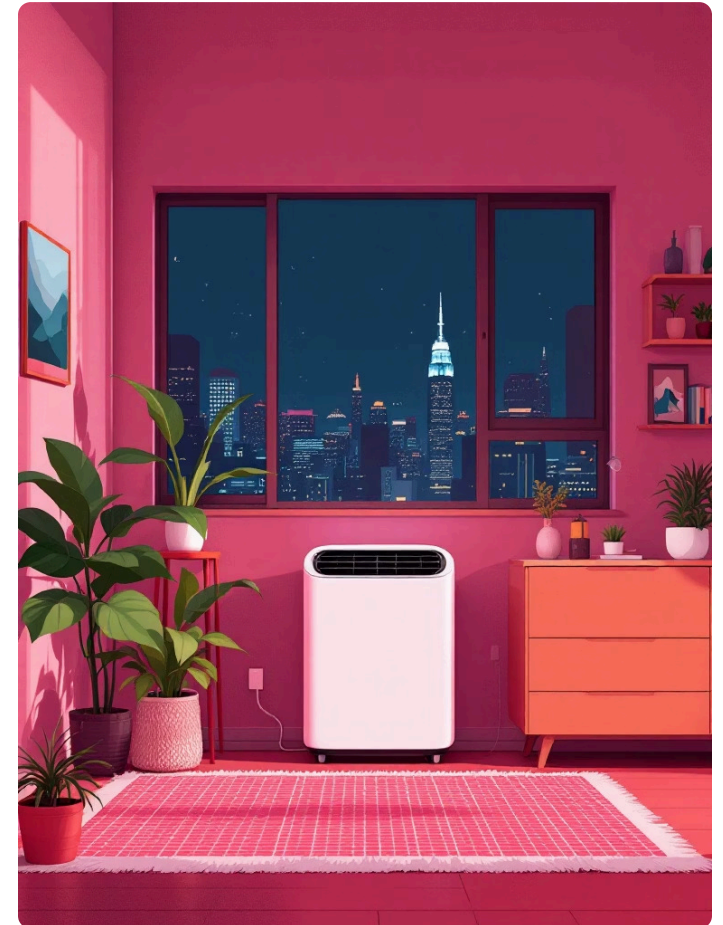
Unlike evaporative air coolers that fail in humid coastal and monsoon zones, our system actively removes moisture, providing crisp, dry cooling.

# Infrastructure-Lite Design

## Plug-and-Play Appliance

- No wall drilling required
- No 16A power sockets needed
- No thick exhaust ducts
- Perfect for urban renters and students

Ideal solution for India's 40 million+ urban renters and students facing structural restrictions.



# Technical Solution

## Phase-Change Refrigeration Cycle Optimized for Localized Efficiency

01

### 200W BLDC Inverter Compressor

Compatible with R134a/R600a  
refrigerants

02

### Laminar Flow Nozzle

Honeycomb straightener creates "Cold  
Tube" traveling 5 feet

03

### Water-Sink Condenser

Closed reservoir needs only 0.5-inch  
vapor-evacuation tube

04

### Active Dehumidification

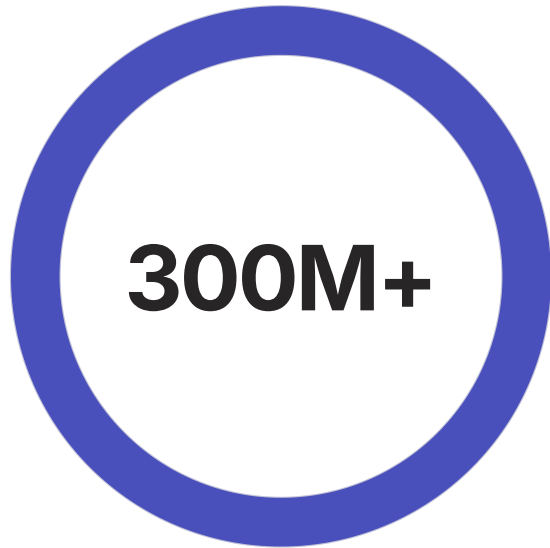
Evaporator maze extracts moisture for crisp, dry breeze

05

### Self-Cooling Loop

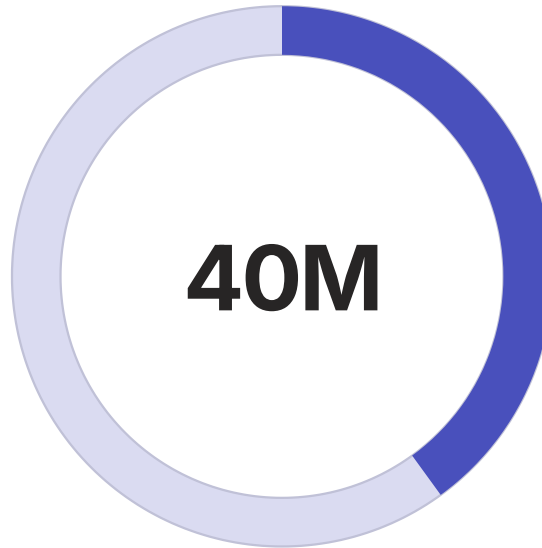
Condensate recycled to cool compressor, 15% COP  
improvement

# Market Opportunity



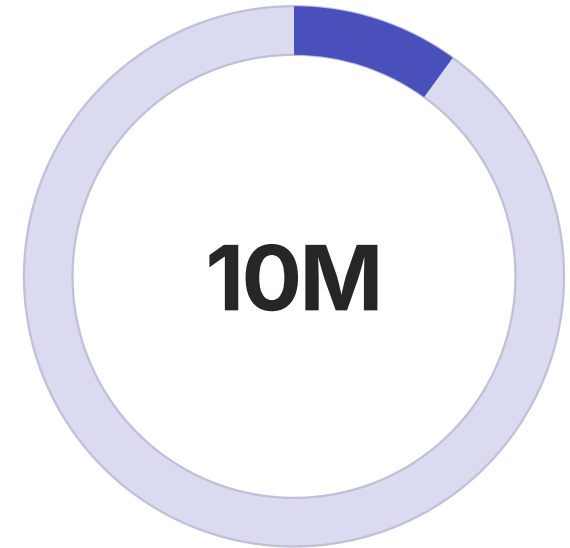
**Total Addressable Market**

Indian households



**Urban Middle-Class**

South/East India humid zone



**Students & Young Professionals**

Hostels and co-living spaces

# Comparative Advantage

Metric	Air Cooler	Micro-AC	1.5 Ton Split AC
Cooling Tech	Evaporative	Refrigerant (Dry)	Refrigerant (Dry)
Power Draw	150-220W	180-200W	1,500-1,800W
UPS/Solar	Yes	Yes (High Duration)	No (Requires 3kVA+)
Humidity	Increases	Decreases	Decreases
Install Cost	₹0	₹0 (Plug & Play)	₹2,500+

By leveraging mass-market refrigerator components, we provide premium dry-cooling at operational cost comparable to ceiling fan.

# Revenue Model & Path Forward



## Direct-to-Consumer (D2C)

Target urban professionals via Amazon and Flipkart platforms



## B2B Hostel Partnerships

Tie-ups with co-living spaces (Stanza Living, Zolo) as value-added amenity



## Risk Mitigation

Thermal intelligence MCU, standard refrigeration components, low-GWP refrigerant

