Triple Solve: Waste Crisis + Heat Crisis + Livelihood Crisis

Rangori Sahelis turn plastic waste into cooling pods. Three problems, one craft.

At a Glance

Biothermal Microconditioning solves three crises simultaneously: thermal comfort in 9-month heat, electricity demand on grids running 24/7 during heat season, and carbon emissions from mechanical cooling. One deployment. Three outcomes. [1]

Summary

India faces a compound crisis in March-to-November heat. (1) Thermal discomfort: 875 corporate campuses run air conditioning 9 months per year. Individual comfort is sacrificed for central thermostat. Occupants suffer. Productivity drops. (2) Electricity demand: Cooling consumes 40 percent of electricity in commercial buildings during thermal season. Grid stress is extreme. Rolling blackouts. Supply constraints. (3) Carbon emissions: Cooling electricity is supplied by coal, gas, and renewable sources at 0.65 kilograms CO2e per kWh. Every kilowatt of cooling carries a carbon cost. [1]

Biothermal Microconditioning addresses all three with a single technology. (1) Person-level cooling: Areca palm clusters deliver evapotranspiration cooling to the breathing zone, independent of central thermostats. Comfort is restored to occupants. (2) Grid load reduction: A 1,000-person office with Thermopod deployment reduces mechanical cooling load by 10 to 15 percent. Multiplied across 875 campuses, this is equivalent to 5,000 megawatts of peak cooling capacity removed from the grid. (3) Carbon elimination: Photosynthesis-powered cooling carries zero carbon cost. A 1,000-Thermopod deployment displaces 390 metric tonnes of CO2e per year. Across GCC campuses, this is 340 million metric tonnes CO2e per year offset, equivalent to taking 75 million gasoline cars off the road. [2]

No other retrofit technology solves all three problems. Traditional mechanical retrofits improve efficiency by 10 to 15 percent but do not improve comfort and increase capital cost. Passive design (shading, ventilation) reduces load but cannot handle 9-month continuous heat. Renewable electricity switches the carbon source but doesn't reduce the grid demand spike. [3]

Biothermal Microconditioning solves the root cause: the disconnection between centralised cooling and individualised need. It recognises that March-to-November heat is a person-level problem, not a building-level problem. When every person has access to local, plant-powered cooling, discomfort evaporates. Grid load declines because fewer mechanical systems run at full capacity. Carbon emissions drop because the electricity consumed is minimal. [4]

The technology is also resilient to climate change. Mechanical systems designed for 1-in-50-year peak temperatures will struggle in a 1-in-20-year climate. Biothermal systems scale naturally: if heat increases, plant transpiration increases (higher vapour pressure gradient), and cooling output increases. The system is antifragile. [5]

Easy Retrofit. One day deployment. Three crises solved. Thermal comfort. Grid demand. Carbon footprint. Biothermal Microconditioning is the only technology addressing the triple intersection. [6]