The First Cooling Approach That Addresses the Individual, Not the Zone

Biothermal Microconditioning places comfort where the person sits, not where the duct points.

At a Glance

HVAC controls a zone. Occupants are individuals with individual thermal needs. When the zone becomes the control unit and the person is forced to adapt, the person loses. [1]

Summary

Zone-based HVAC control treats the building as a collection of 100-to-500-person thermal zones, each controlled by a single thermostat. This approach made sense in 1980 when installing individual thermostats was expensive and complex. It makes no sense now. The comfort science has moved on. Biology knows zones are fiction. People are not zones. People are individuals. [1]

Individual thermal comfort depends on individual physiology (metabolic rate, body composition, age, sex, thermoregulatory capacity), individual clothing (long sleeves versus t-shirt, jacket on or off), individual activity (sitting vs. moving), and individual acclimatisation. No single setpoint satisfies a zone of 200 people with 200 different combinations of these variables. The zone approach inherently forces discomfort on 50 to 100 people per zone to achieve acceptable comfort for the remainder. [2]

Research on thermal comfort in open offices shows that 25 to 30 percent of occupants report thermal discomfort at any given time with single-thermostat control. Discomfort is persistent: the same individuals report discomfort day after day. These are not outliers. These are people whose thermal physiology differs from the thermostat's assumption. [3]

Individual-level control is now technically feasible and economically viable. Personal thermal devices (heated/cooled seats, wristbands, vests) provide one approach. Biothermal Microconditioning provides another: distributed clusters that create local microclimates within the zone. Individuals choose proximity to clusters based on individual thermal need. No thermostat negotiation. No forced compromise. Just local choice. [4]

Offices deploying Thermopod clusters transition from zone control to individual adaptation. Occupants report comfort increases from 70-75 percent to 90-95 percent. Thermal comfort complaints drop to near zero. Productivity increases measurably. The shift from zone to individual is the fundamental insight. Easy Retrofit. One day. From zone control to individual comfort. Physics finally aligns with biology. [5]