The Thermostat Is Set by Someone Who Is Not Sitting Where You Are

One dial controls comfort for 200 people. 199 did not set it.

At a Glance

Building thermostats measure air temperature at the ceiling return or a central wall sensor. Your seat is 2 metres away horizontally and 1.5 metres lower vertically. The thermostat sees different air than you occupy. You are cooling a place nobody sits. [1]

Summary

Central HVAC systems use single-point or zone-based thermostat control. The sensor is placed at a standardised location, typically a central return air duct or mid-wall sensor, to reduce installation cost and provide a single temperature reading that controls system operation for the entire floor or zone. [1]

A 200-person open office floor with a single thermostat sensor operates under the assumption that all 200 occupants experience the same thermal environment. In reality, thermal stratification is severe. Ceiling height is 3 metres. Return air is at 3 metres. Occupants sit at 1.5 metres. The temperature differential between the occupied breathing zone and the return air sensor is often 2 to 4 degrees Celsius. The thermostat reads a cooler space than the people occupy. [2]

Corner offices near windows experience radiant heat gains from solar load. Seat positions under air supply vents experience cold drafts. Middle-floor workstations experience rising warm air from floors below. A single setpoint of 22°C is correct nowhere and wrong everywhere. [3]

Biothermal Microconditioning adds person-level cooling independent of central thermostats. Areca palm clusters placed within 2 metres of seating areas create local evapotranspiration and shade, reducing the thermal stress that central HVAC misses. Terrapods absorb daytime heat spikes that central systems cannot respond to quickly enough. The result: occupants experience adaptive comfort at breathing zone level. One day to deploy clusters. No thermostat changes. No central system redesign. The building's thermal privilege gap shrinks immediately. [4]