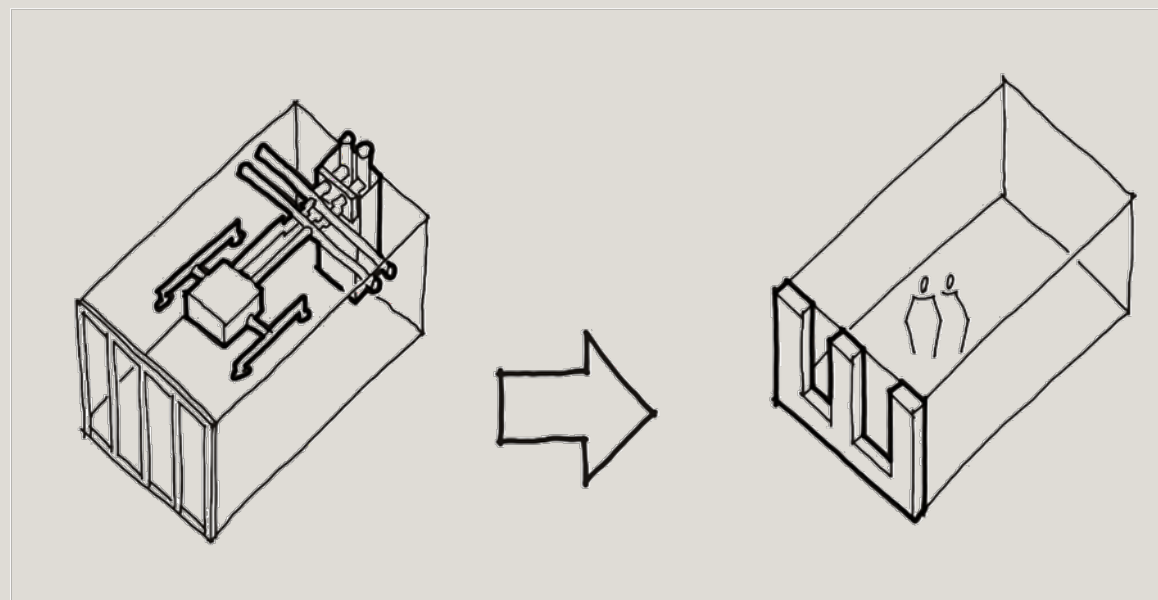


NowtHaus Summary



What is NowtHaus?

Buildings have become increasingly dependent on mechanical systems.

Heating, cooling and ventilation provide tightly controlled internal conditions, but at a cost: more plant, more distribution, more upfront carbon, more maintenance and more things to replace.

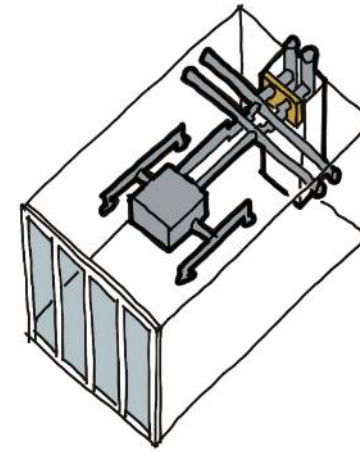
NowtHaus asks a different question: rather than starting with systems and asking how efficiently they can operate, it asks how much of the work the architecture itself can do?

Not: What systems are needed for comfort?

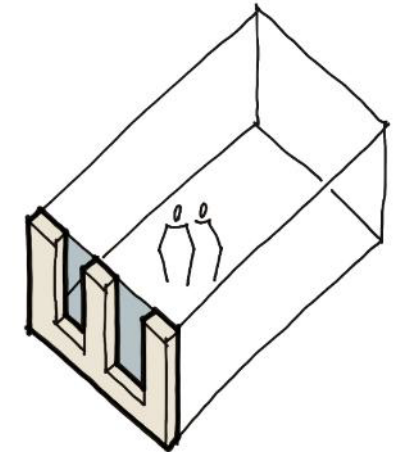
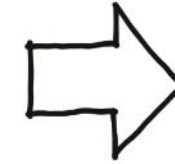
Instead: What conditions do people need to be comfortable?

NowtHaus takes its name from the Yorkshire word 'nowt', meaning nothing. With a nod to Reyner Banham's *The Architecture of the Well-Tempered Environment*, it captures the idea of a building that is Naturally Operated and Well Tempered.

Developed by Bennetts Associates (architects) with Ramboll (building physics) and CPC (costs), the study tests the proposition through the familiar and relatively predictable form of the standard office.



**Complex
Mechanical Systems**



**Simple
Natural Comfort**

Testing today's winter and tomorrow's summer

Dynamic thermal modelling has been used to test the proposition against realistic occupancy and present-day and future weather files.

Test conditions

- 100,000 sq ft office across different plan forms
- Realistic occupancy, lighting and equipment loads
- Current winter and future summer weather files

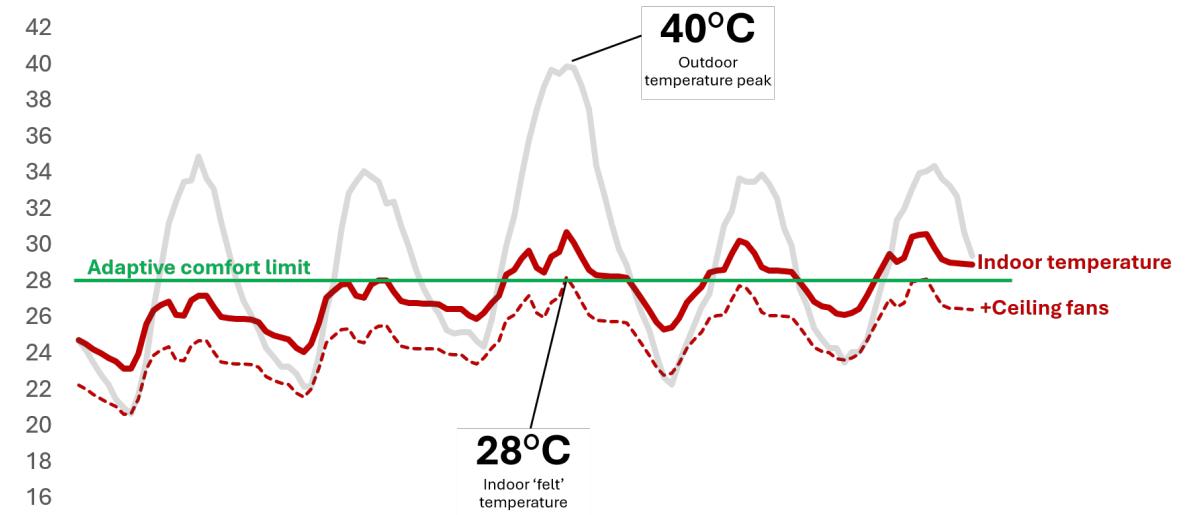
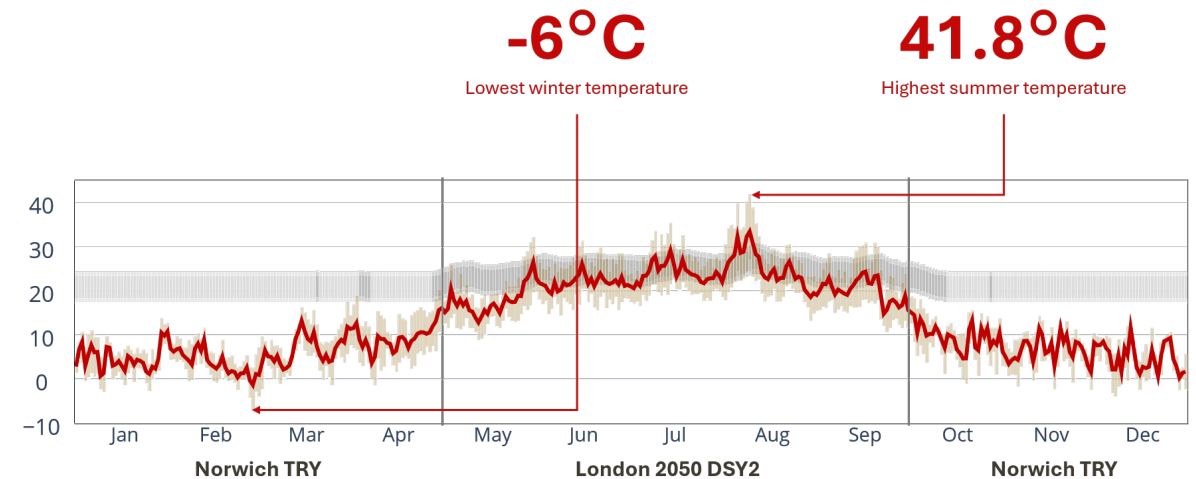
Winter

- **5 W/m²** peak heating demand
- Lighting and other internal gains can meet the remaining load

Summer

- In the tested heatwave:
- **40°C outside, 28°C inside**

Solar control, exposed thermal mass, natural ventilation and secure night purge limit overheating, with ceiling fans extending the adaptive comfort range.



NowtHaus in a Nutshell

The study tests how far better fabric, thermal mass, solar control and natural ventilation could reduce reliance on conventional heating and cooling systems.

- PassivHaus envelope with 40% WWR
- Extensive thermal mass from concrete frame
- Easy to use operable windows/vents
- Automated & secure night purge ventilation

+5% capex

- No complex heating system (lights only)
- No complex cooling system (passive only)
- Minimal mechanical ventilation

-15% capex

-10%

Capex

-35%

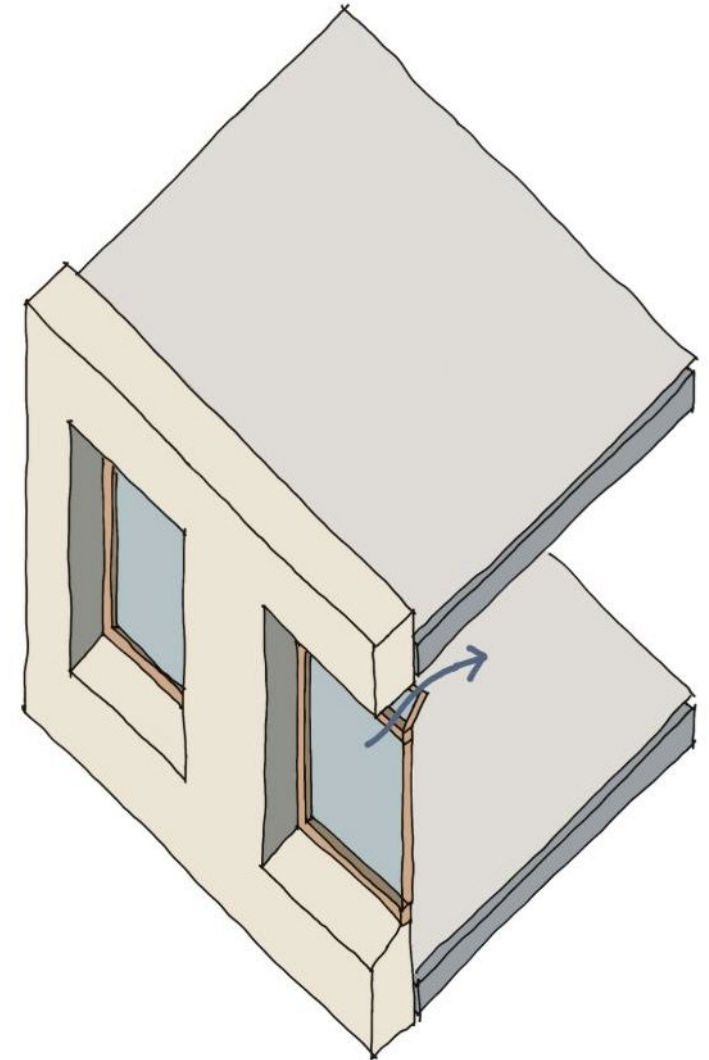
Opex
(Ex. energy)

-15%

Embodied Carbon

-60%

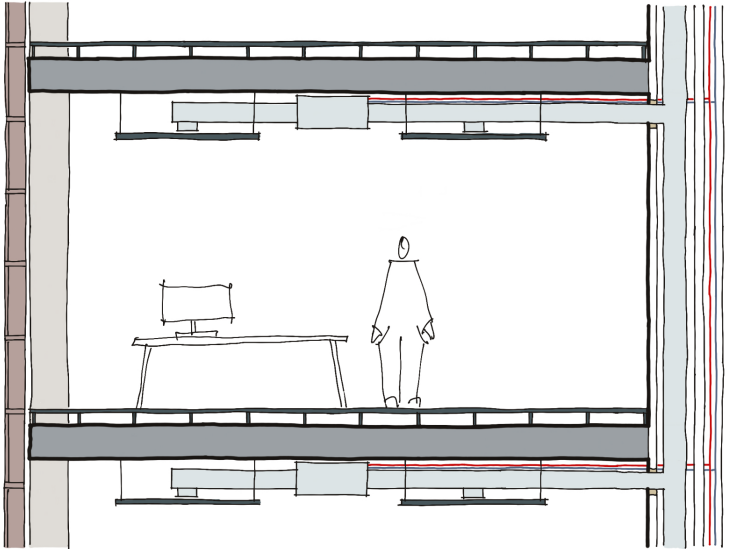
Operational Energy
(Base build)



Route To Reinforcement

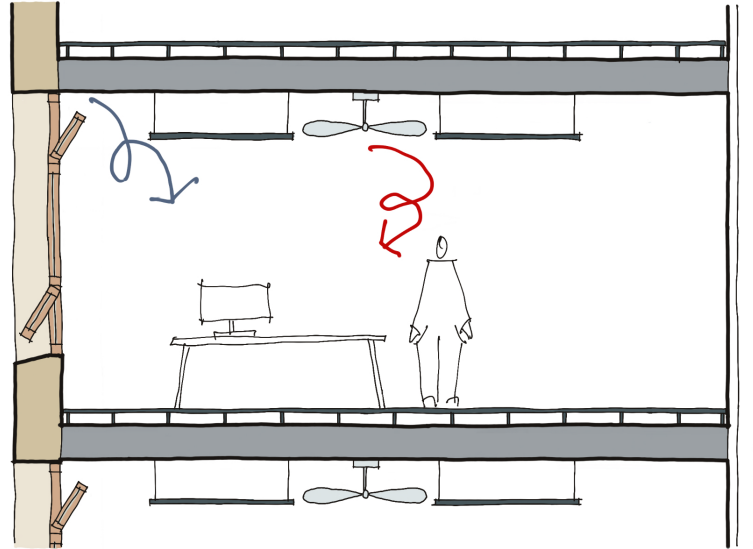
NowtHaus need not be a fixed proposition. We are also exploring how it could be reinforced incrementally if climate, occupation or expectations change over time.

Conventional HVAC Strategy:



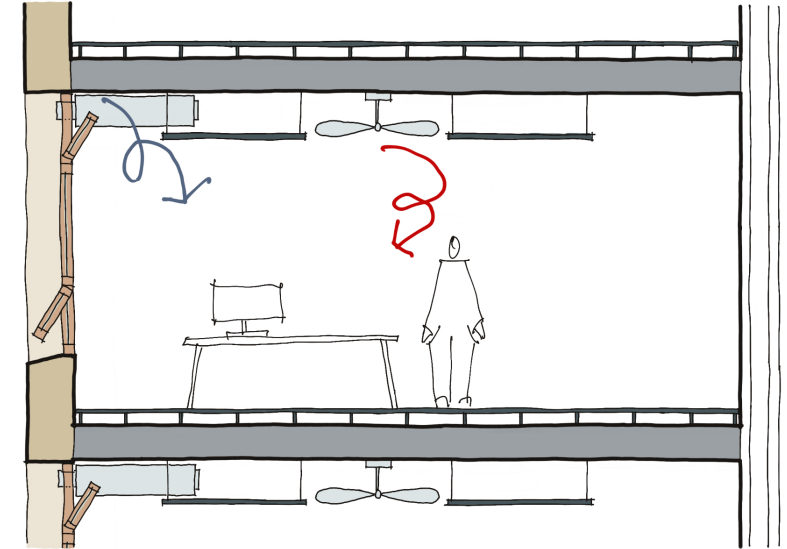
- Lightweight façade
- 4 pipe FCUs
- Centralised AHUs and ASHP
- Vertical water and air distribution

NowtHaus Baseline:



- Significantly better performance facade
- No active cooling or heating
- Automatic top and manual bottom vents
- Exposed thermal mass
- Optional ceiling fans
- Vertical water riser, but no distribution pipework

NowtHaus Reinforced:



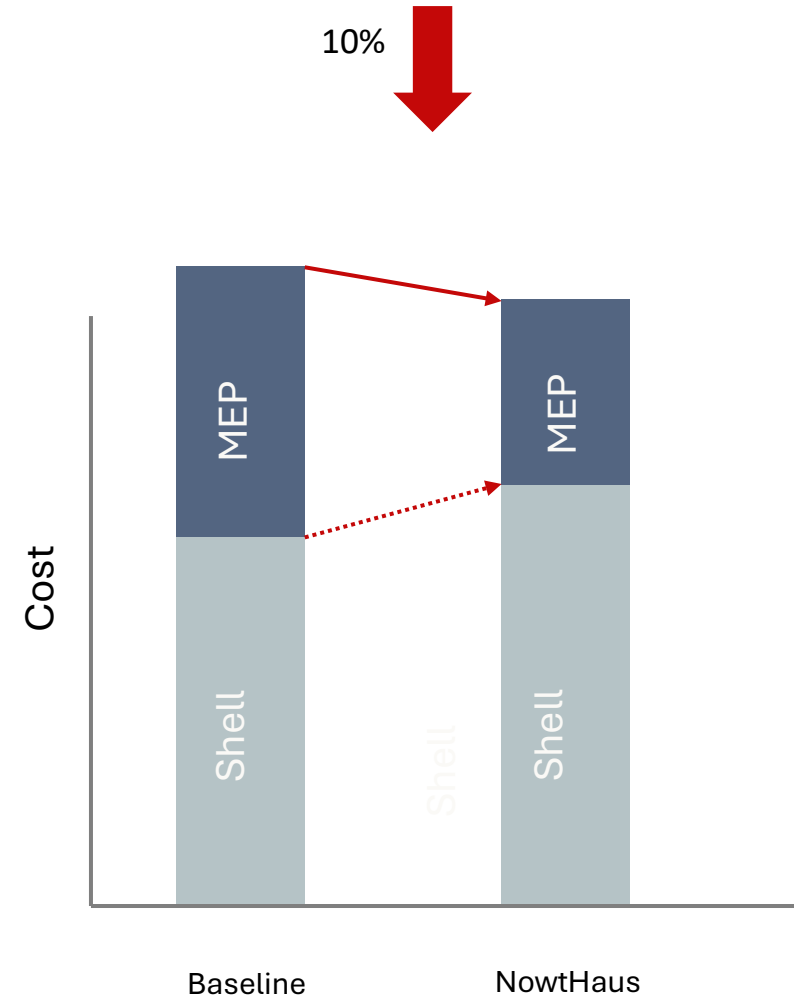
- Baseline Spec+
- Distributed MVHR
 - Integrated ASHP
 - Power supply only

Capital cost

Shifting investment from complex mechanical systems to better fabric reduce overall capital cost, while simplifying coordination & future replacement.

NowtHaus shifts where cost is allocated – more fabric, less kit:

- Removal of boilers, chillers, AHUs & associated ductwork.
- Increased façade cost, with better insulation, airtightness & glazing.
- Façade cost increase by about 5% of the total building cost, omitting the entire HVAC system removes about 15%.
- No air associated fire dampers.
- No air risers (1.5-2% additional NIA).
- Potential to create office space in lieu of a rooftop plant.



Emerging Rules of Thumb

The work is also testing where the idea is viable, and how plan depth, thermal mass, façade performance, glazing and solar control affect the outcome.

Definitely

(Strong starting point)

- Shallow floorplates – 10.5m
- Exposed concrete thermal mass
- Tall floor to ceiling – 3m plus
- Good U-value and airtightness (PassivHaus)
- Low glazing ratios – 40%
- Solar control with shading

Maybe

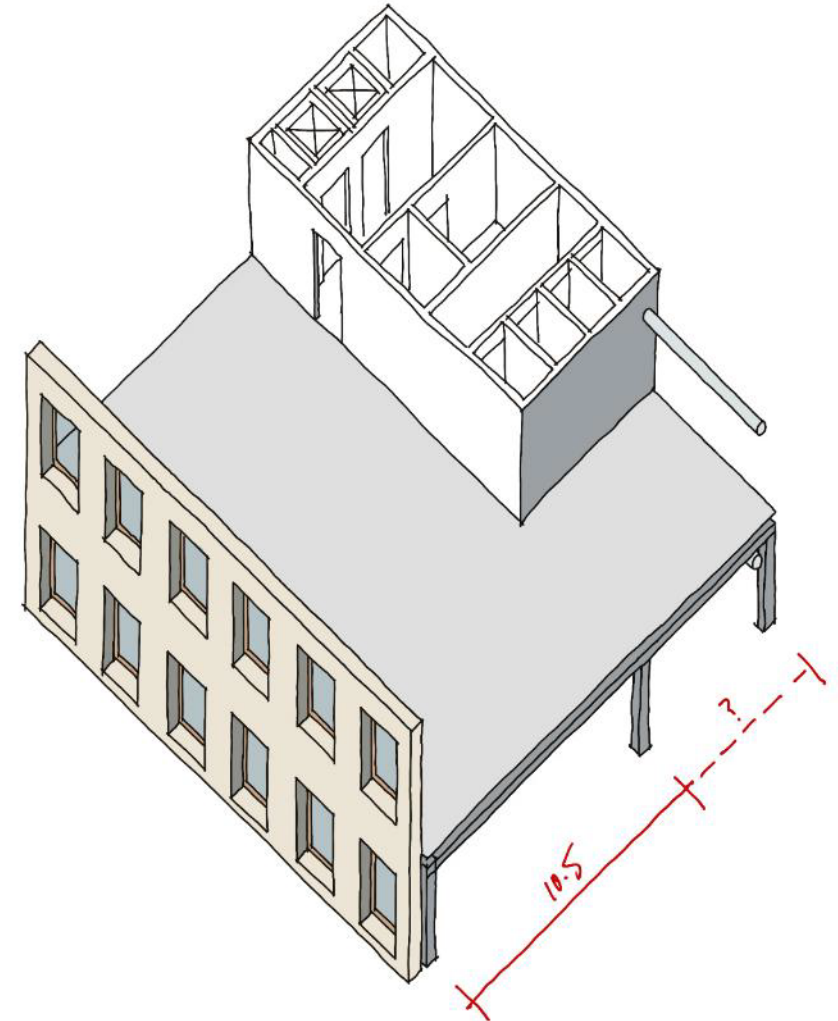
(Depends on the combination)

- Deeper floorplates – 18m
- Cross laminate timber
- Relaxed u-values or airtightness
- Medium glazing ratios – 50-60%

No!

(Work against the proposition)

- Deep floorplates
- No exposed thermal mass
- Low floor to ceiling heights
- Poor U-value and airtightness
- High glazing ratios – 60%+



Bennetts Associates

Thank You

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