

Old houses, ones with solid walls, have a daily and yearly damp cycle – balanced by drying out more than they get wet.

Blindly adding insulation and draught proofing makes old houses skip the drying out phase, so they get damper and damper.

The Internet of Things now makes it easy to link sensors and fans wirelessly.

Fans work quietly together to push more damp out during drying phases.

The house is now in balance with low damp. No rot, no woodworm, no mildew. Less wasted heat, more comfort. WALLCONSERVE.



WallConserve is a trading name of Eyerhymer Limited, UK Company No. 12774273  
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## EYERHYMER LIMITED PRESENTS:



**1821**

A fire in every room; damp air goes up the chimney.  
Cold outside air blows in, and cold air holds less damp.  
A constant draught keeps the walls and windows dry.

**1921**

Boffins are worried about the lack of fresh air.  
Town gas and indoor bathrooms breed mildew.  
Building regulations start to mandate ventilation.



**2021**

Everyone has sensors, and climate control in their car, but only adopters of the Passivhaus approach 'Build tight, ventilate right' have it in their house.

## **A SHORT HISTORY OF DAMP**



**1871**

Cement is invented.  
Walls get so airtight they need special ventilation bricks. But everyone blocks them



**1971**

James Burke appears on BBC 'Tomorrow's World'. The 'car of the future', he says, will have 'sensors' controlling its brakes, engine and heating.

**2026**

Finally, low cost sensors, smartphones and wifi allow all houses to have effective climate control.

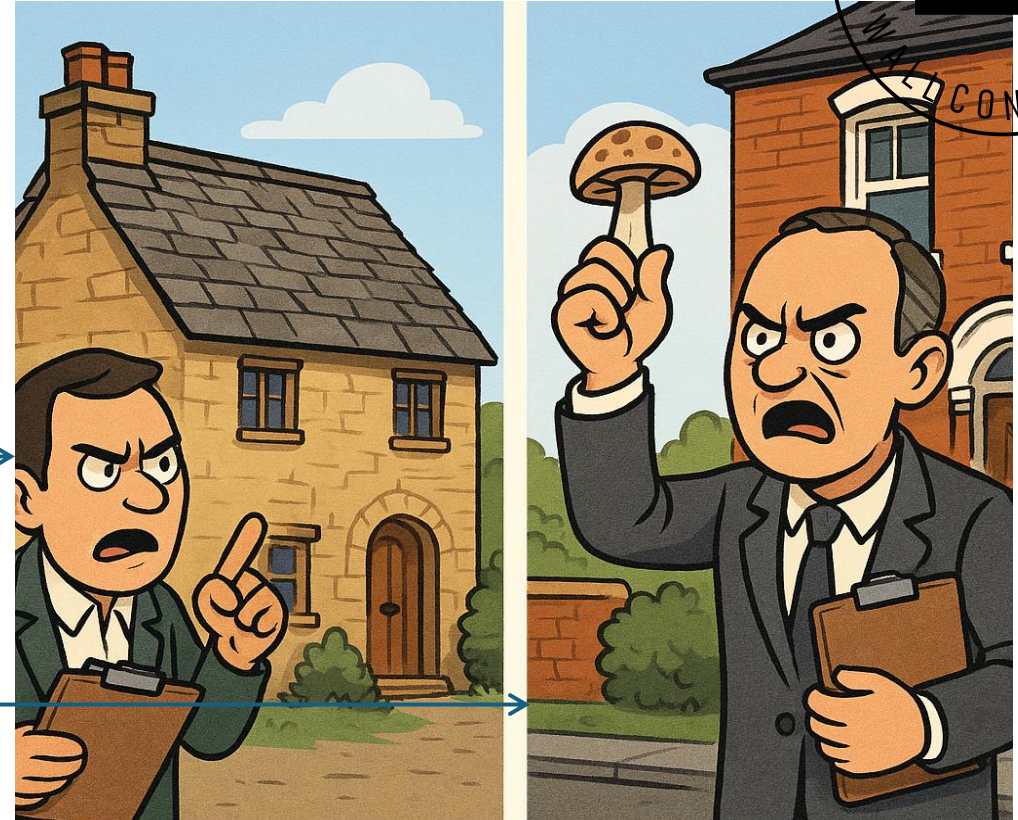
All new houses are airtight and insulated, and on average use 18 MegaJoules of energy in a year. Equivalent uninsulated houses, as built between 1560 and 1960, use 54 MJ, three times as much. Half of British homes were built before 1960.

Old, draughty houses are lived in by the richest people in Britain, and some of the poorest.

Historic stone houses are hard to insulate because you can't change the outside, and prove that you aren't damaging the walls on the inside.

The Government tried to insulate Victorian brick cottages. A 2025 National Audit Office review found that around 98% of homes with external wall insulation installed under ECO had major defects and elevated risks of damp and mould.

## INSULATING IS DIFFICULT



**Conservation Officer**      **Environmental Health**  
Rich and poor, both in trouble for the crime of  
Insulation Without Due Care and Attention

Cornelius Kavanagh, alongside his work as an architect, generates about £30,000 per year for Eyerhymer Limited as a building consultant. →

This is invested into WallConserve to fund its materials and electronic prototyping and payments to Alex Collins to engineer a product.

The prototype has already demonstrated that the WallConserve concept is far bigger opportunity than can be funded by consultancy alone.

Seed Funding is being sought to develop our own sensor technology and materials.

It was through Cornelius's consultancy work that the need for sensors was identified. Thermal modelling - as in these examples - needs to be backed up with proof of performance.

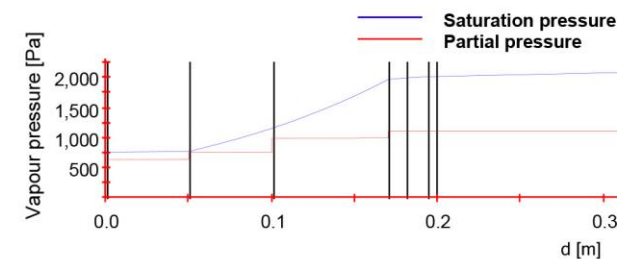
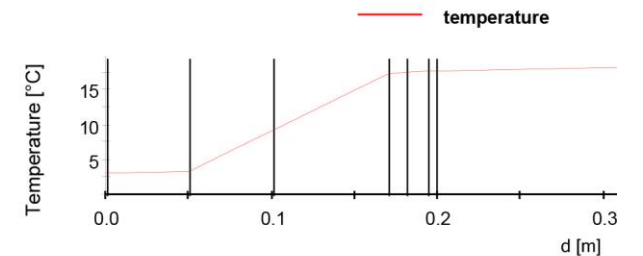
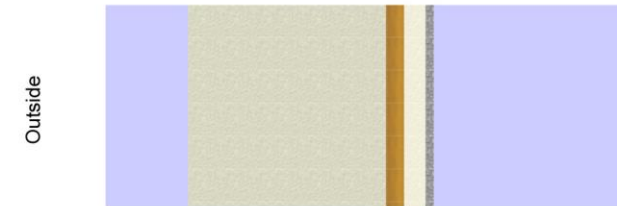
## CONSULTANCY



Vapour pressure distribution  
Calculation according BS EN ISO 13788

1. Month of balance: January

Ti [°C]  
20.0



People don't buy old houses because they enjoy draughts. They need a pleasant indoor climate and whether they are willing to pay for retrofit depends on how it affects the house's value.

Damp-proofing can actually lower a building's value, if it wrecks the masonry irreversibly.

What WallConserve offers is 'damp avoidance'.

There are still many old Sun Fire Office plaques on buildings. If you had the plaque, they would put a fire out before your house burned down.

Mildew, like fire, has a pervasive smell, wrecks valuables, and can be a serious health hazard.

Wallconserve offers a better deal than any fireman - to stop your walls getting mildew before it even happens. You wouldn't even notice it rescuing you.

## DAMP AVOIDANCE

### Expertise

Points of Caution



PROJECT  
ASSESSMENT



Cornelius Kavanagh is an architect working in The Chilterns National Landscape. For 20 years he specified many different approaches to insulating old buildings.

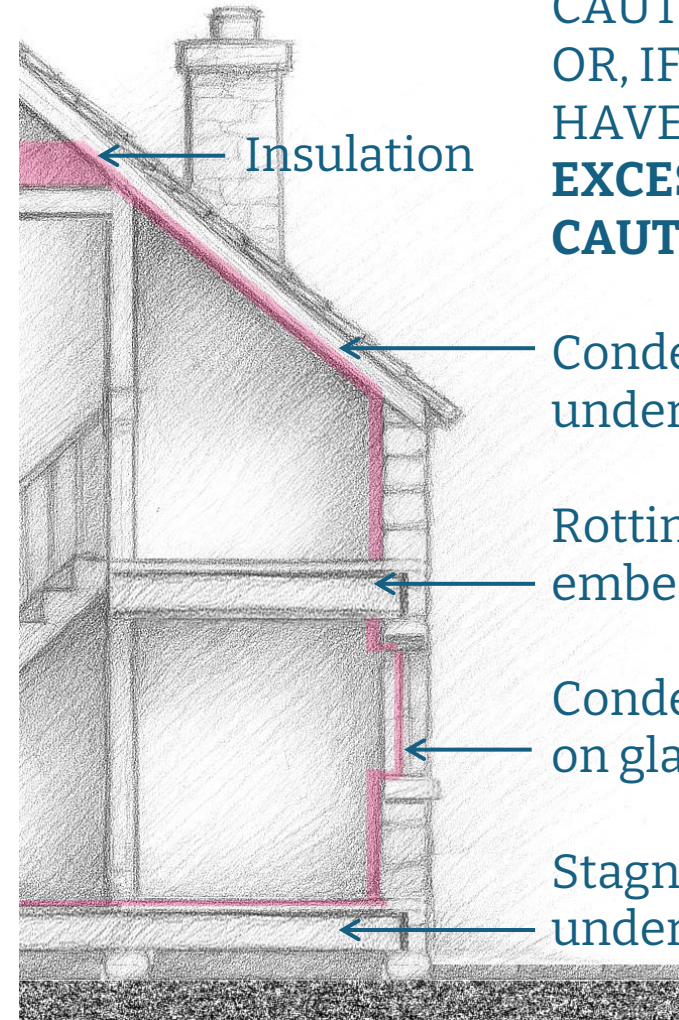
None of them worked, whether green or not.

In 2022, he took a sabbatical to study Green Building at CAT in Wales. He learned the science behind building performance, and brought his own real world experience.

Cornelius now knows the one approach that brings down energy use, improves comfort, and preserves a house's structure from damp.

But that approach relies on constant response from sensors that are not commercially available. Cornelius has designed them. WallConserve is making them.

## DAMP MISUNDERSTOOD



CAUTION!  
OR, IF YOU  
HAVE NO DATA:  
**EXCESSIVE  
CAUTION!**

Condensation  
under slates

Rotting ends of  
embedded joists

Condensation  
on glass

Stagnant air  
under floor

Damp lives in hidden areas, corners and joins, and can come from inside, as any hiker knows.

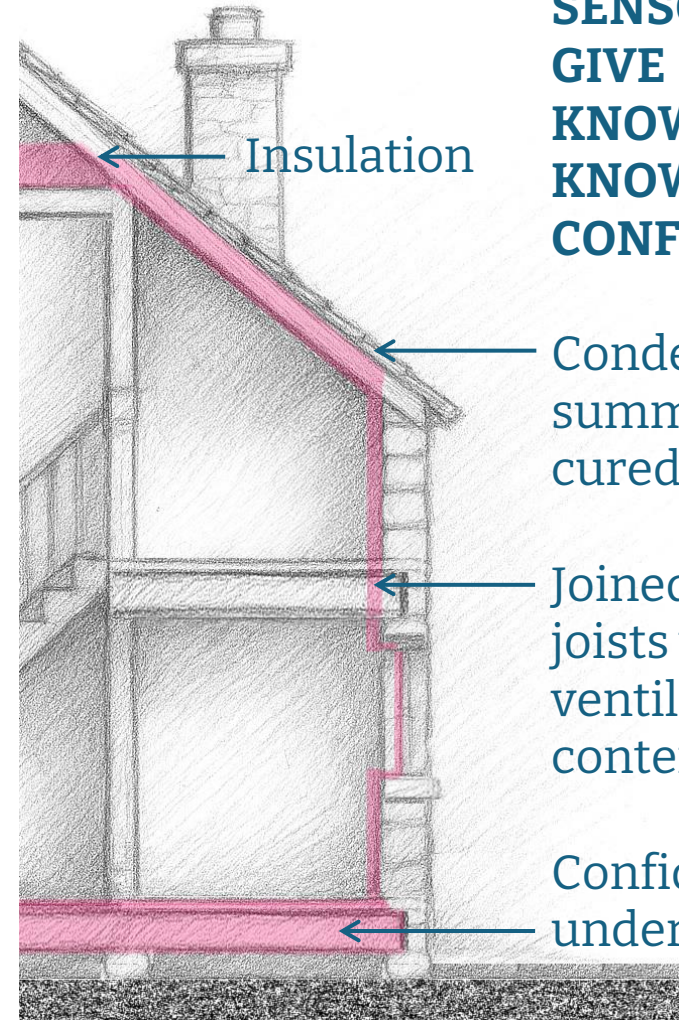
A plastic cagoule may be 100% waterproof, but you will end up wet from your own sweat. In June, it rained inside the Museum of Industry in Washington from under-roof condensation.

And even a waterproof and breathable jacket doesn't help if it doesn't reach your trousers. I have never found a retrofit firm that has the confidence to join up the ground and first floor insulation by insulating between floor joists.

Air around timber lets it dry after rain – but a moisture sensor in the joists could keep the ventilation for the times it is really needed.

And the data from these sensors has another value - it is usable in training the next system.

## DAMP UNDERSTOOD



**SENSORS  
GIVE  
KNOWLEDGE  
KNOWLEDGE GIVES  
CONFIDENCE**

Condensation only on summer nights – cured by ventilation

Joined up insulation to joists with bypass ventilation if moisture content is increasing

Confidence to insulate under ventilated floor