

Performance testing of heaters and curtains

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Electric heater testing

Curtain performance testing

It's not just heating...

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Heater test results

Best heaters:

oscillating + radiant (ceramic)
with a fan

Worst heaters:

oil-column heaters
without a fan

Goldair oscillating tower:
5 degree rise in 6 minutes

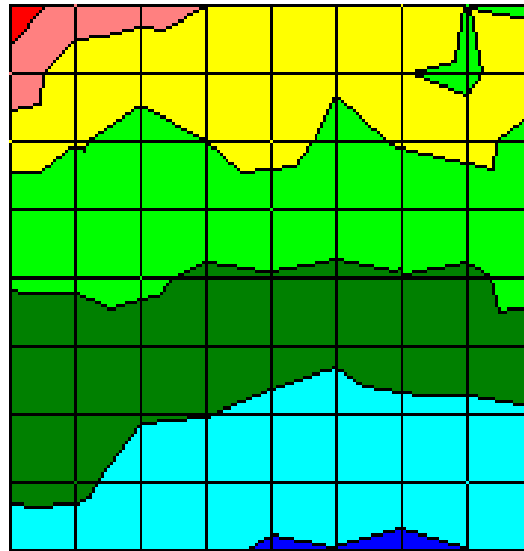
DeLonghi Dragon oil column:
5 degree rise in 20 minutes
uneven heat



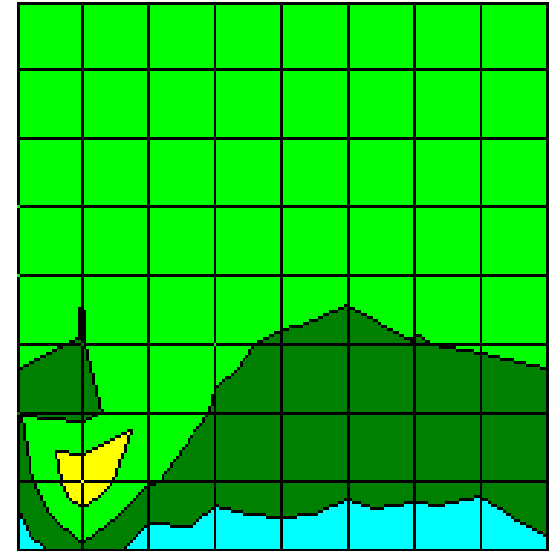
Heater test results

Oil column heater results in severe heat stratification after two hours.

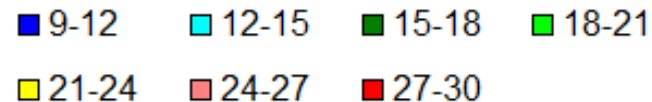
With a desk fan:
5°C temp rise achieved 3x faster



Oil-column heater



Oscillating tower fan heater



Which heater where?



Convection heaters: oil column and box type. Designed to take the chill off. Good for bedrooms, offices, supplement main heat source in living area.



Portable fan heaters: spot heating directly to body e.g. when sitting in a cold study.



Radiant heaters: directional (spot) heating and background heat. Not recommended for bedrooms. Ceramic elements safer - below 200°C.



Night-storage heaters: release most heat while you're out during the day. Not recommended.



LPG heaters: should never be used – run risk of CO poisoning if a fault develops.

Eco panels

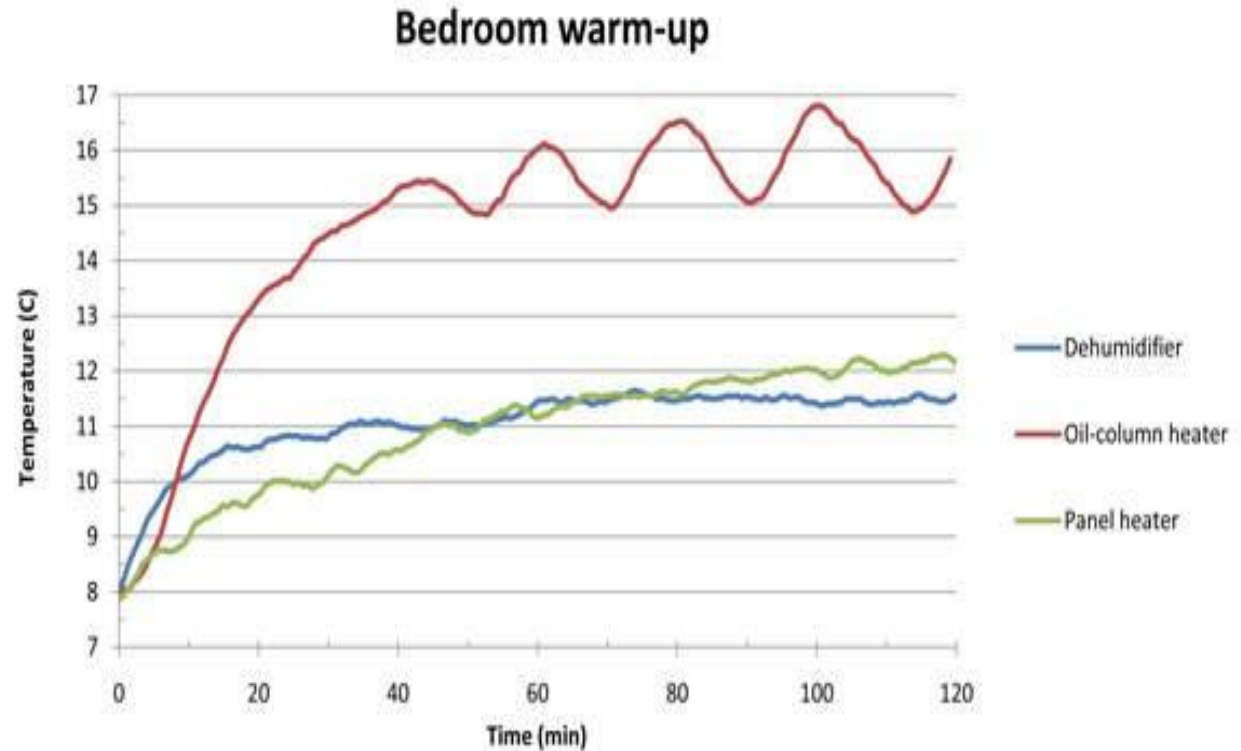


Eco panels

Most panel heaters marketed as 'eco' deliver ~400W.

Eco panel vs oil-column heater vs dehumidifier

WHO recommends minimum bedroom temp of 16°C.



After two hours, panel heater had raised temp (slowly) to only 12°C, similar to dehumidifier.

Verdict: panel heaters fall far short of raising bedrooms to healthy temp, even if bedroom is well-insulated.

Time for a heat pump?

- Electric heaters aren't powerful or efficient enough to heat living areas to a healthy temp affordably.
- 38% of houses in recent housing WOF trial on private rentals did not have a fixed form of heating.
- Fixed form of heating should be able to keep living area at 18°C (or 20°C if children/elderly present) without need for any other heating.
- Use our sizing calculator to find how many kW you need, then compare COP/EER/noise of models that size.

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Double glazing required for most new builds, but expensive and difficult for old homes.

Insulated room divided by insulated wooden wall with window.

Wooden and aluminium frames.

-4°C to 26°C across window.

Heat loss through window measured over two hours for various curtains and secondary glazing products.



Secondary glazing (DIY film) most effective.

Floor-length > sill-length

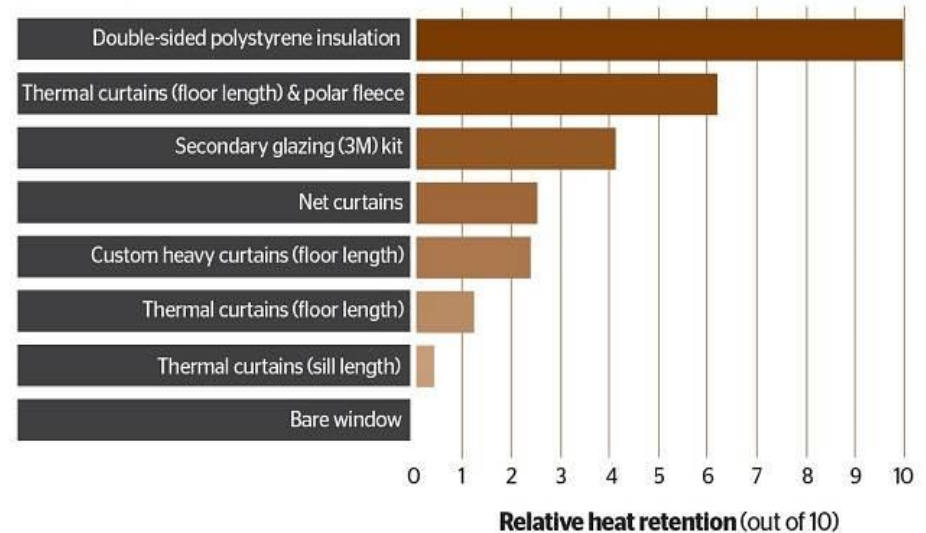
Sill-length = nothing at all

Net curtains are surprisingly effective.

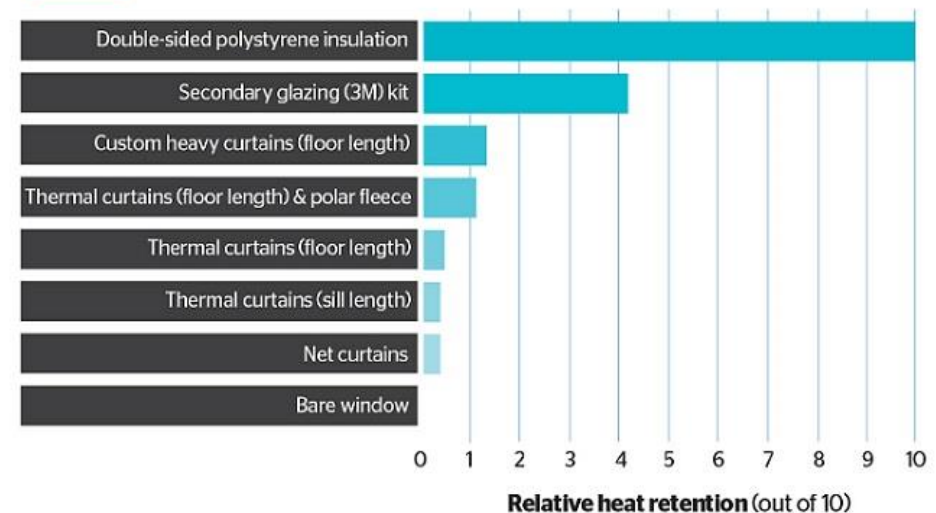
Important to consider reverse chimney effect: stop circulation of air due to cool air sinking which leads to warm air being drawn towards the window.



Wooden-frame window



Aluminium-frame window



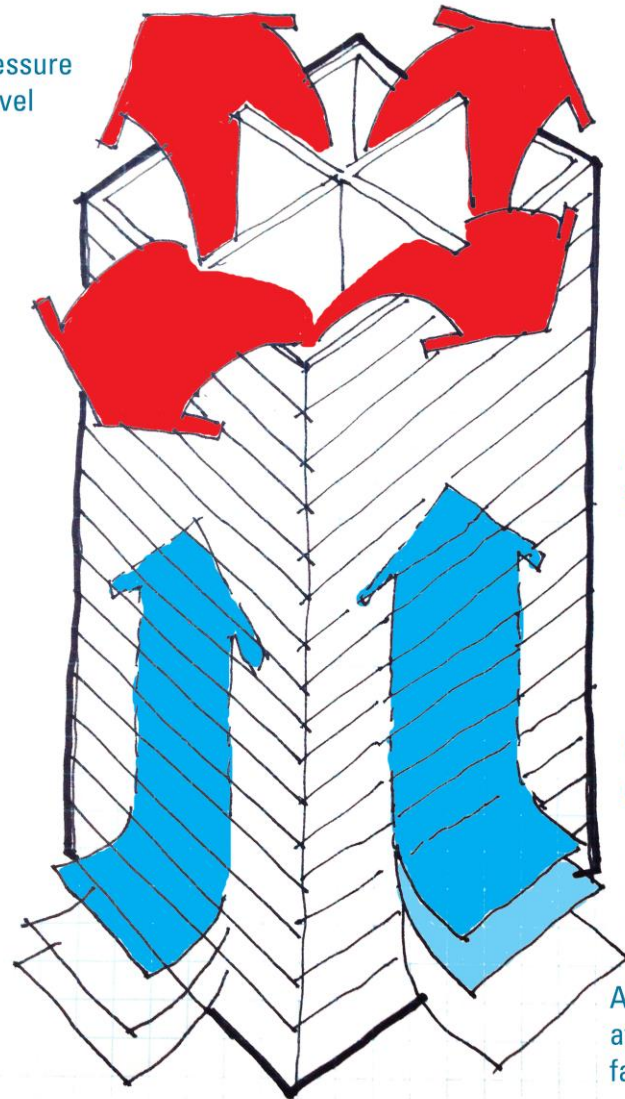
'reverse chimney effect'

Circulation of air:

Air next to the glass cools and sinks.

Warm air is drawn from the ceiling to the window.

Positive pressure on upper level



Air rises as it warms

Negative pressure on lower level

Air introduced at base through facade and openings

Curtain tips

Curtains performed better on wooden frames.

Secondary glazing works best with aluminium frames.

Pelmets help, but not much.

The material a curtain is made from is far less important than stopping air movement.

A fan significantly reduces heat loss.



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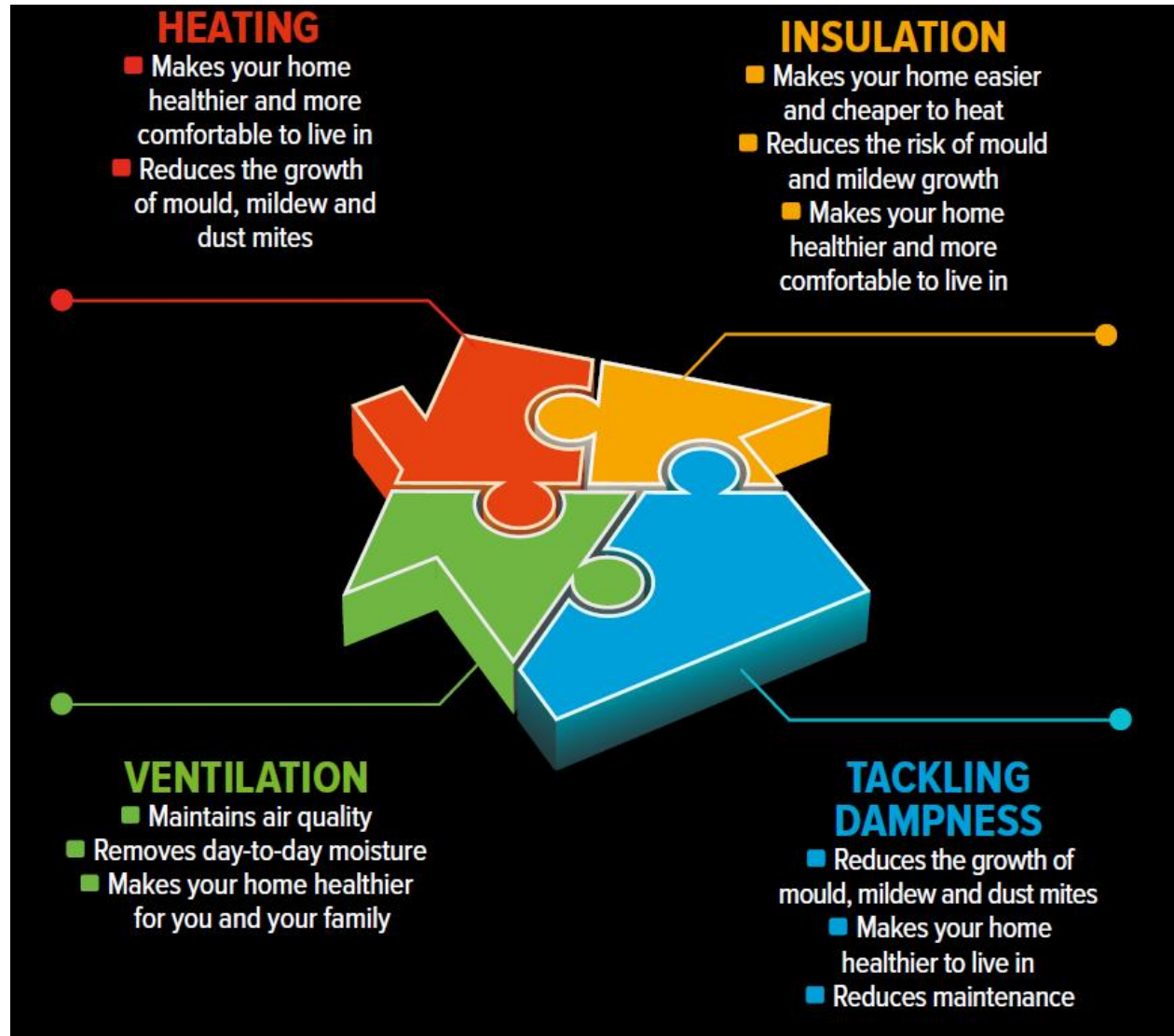
Curtain performance testing

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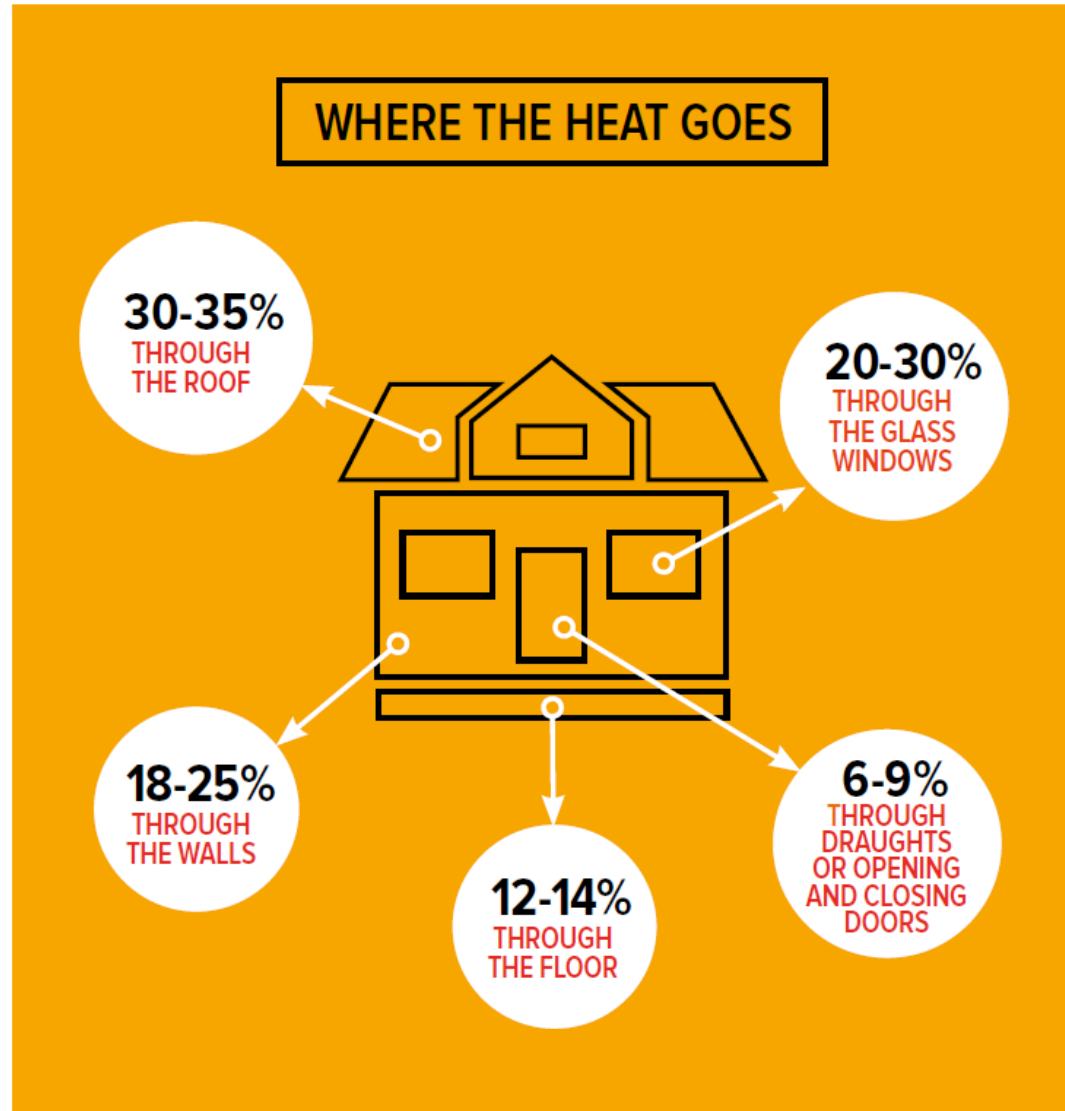
No silver bullet to keep your home warm and dry.

Four pieces to the puzzle.



It's not just heating...

Insulate first...



It's not just heating...

Tackle sources of dampness.

It takes more energy to heat water than to heat air.

Ventilation and dehumidifiers.



It's not just heating...

Dehumidifiers also heat the room.

But they perform best at higher temperatures.

Look for one that performs well under 15°C.

Use a heater and dehumidifier together.





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