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Big 5 inventions to end the current global housing crisis

1. The precast frame structure
2. Beams incorporated columns
3. 2-phases concrete mixing method
4. Diagonals insulation system
5. **Air destratification by extraction**

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5. Air destratification by extraction

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5. Air destratification by extraction

5.1 Interesting facts about heating

i) Most of the time, occupants are in the lower 1/3 of the volume of houses.

ii) However, due to thermal convection, warm air rises to the ceiling, and heats firstly the 2/3 of volume of the room.

iii) In addition, the 2/3 upper volume causes heat losses through ceiling and walls.

iv) Then, there are 2 uninvited beneficiaries: the upper 2/3 of air volume, and heat losses. They have priority and they hit the jackpot. Thermal convection rule is: “The useless and heat losses first”. Occupants last.

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5.1 Interesting facts about heating

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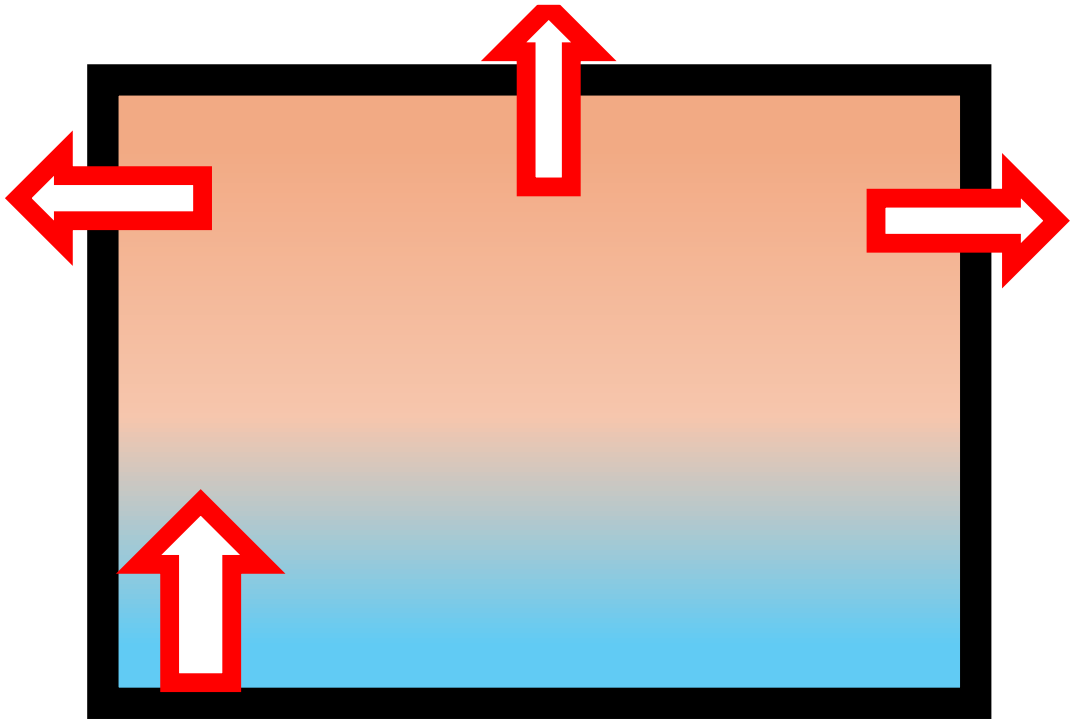
Heating just to cover losses and warming the useless 2/3 upper volume of air.



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5. Air destratification by extraction

5.2 The state of art in heating

5.2.1 Let-it-be

i) Heating is increased to cover losses and to uselessly warm the upper 2/3 of air volume, until it remains enough heat also for the lower 1/3.

Thermal photos of houses show hot entire houses, while only 30% of it really needs heating, and would be satisfied with 2-5°C less t°.

Note: Reducing 1°C in heating results in 7% energy saving!

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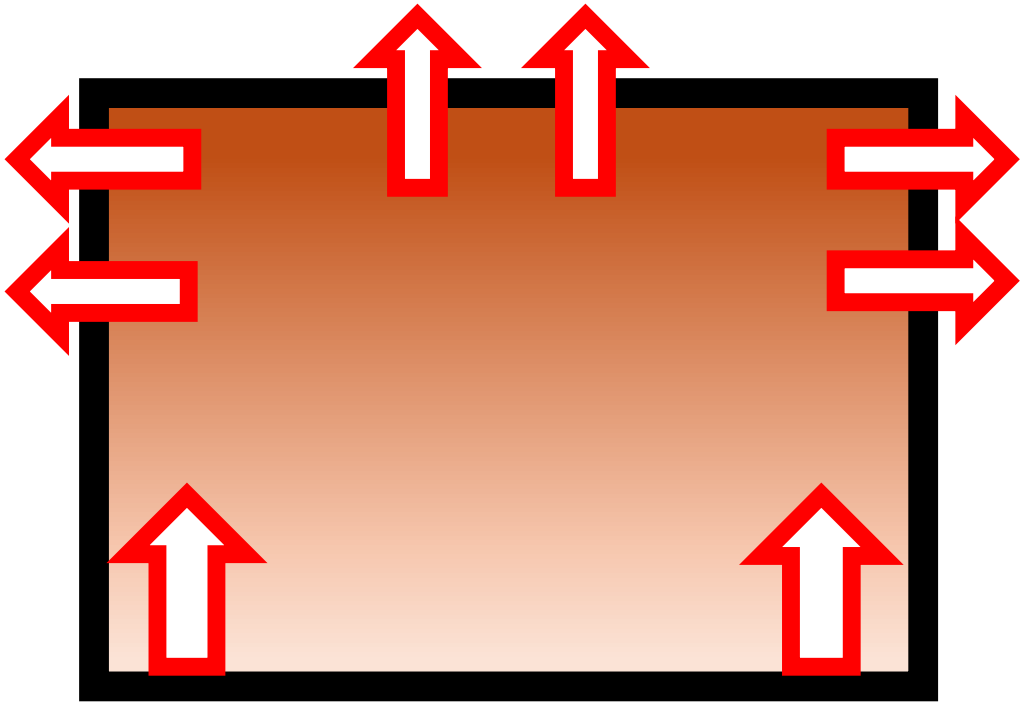
5. Air destratification by extraction

5.2 The state of art in heating

5.2.1 Let-it-be

Increasing heating



Thermal photo of house

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5. Air destratification by extraction

5.2 The state of art in heating

5.2.1 Let-it-be

ii) The higher the ceiling, the greater heat losses.

“Natural Resources Canada's Office of Energy Efficiency encourages the construction and renovation of low-rise residential buildings, which increases the energy efficiency of homes”.

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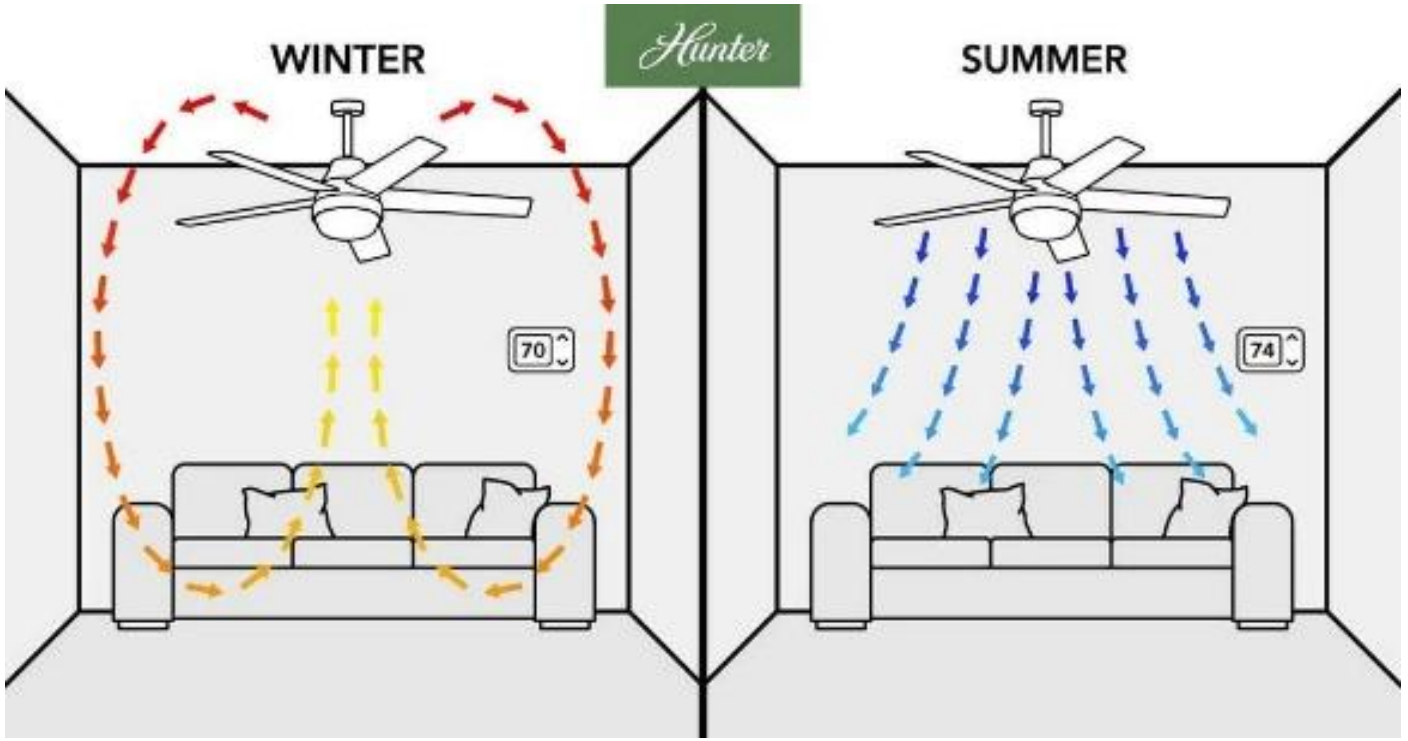
5. Air destratification by extraction

5.2 The state of art in heating

5.2.2 Ceiling fan

- Volumetric uniformization of temperature.
- Uncomfortable air drafts.
- Air is rebounding upon occupants and furniture.
- Quite operation.



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5. Air destratification by extraction

5.2 The state of art in heating

5.2.3 Packaged Terminal Air Conditioner

- Volumetric uniformization of temperature.
- Powerful air drafts.
- Air is rebounding upon occupants and furniture.
- Significantly noisy.

Packaged Terminal Air Conditioner

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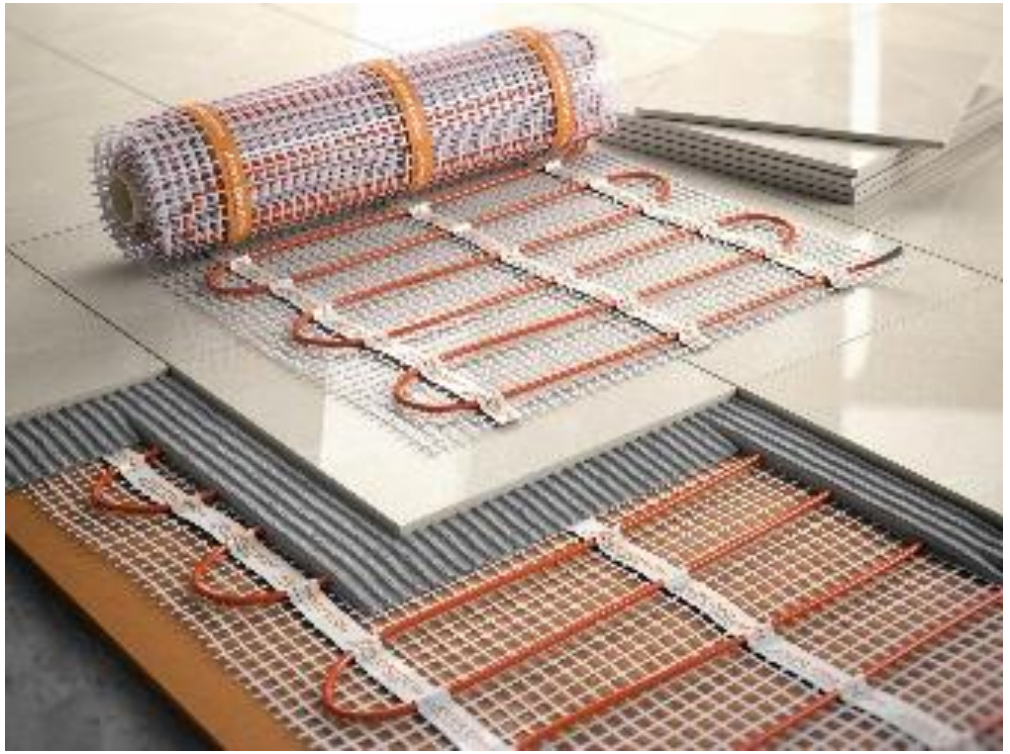
5. Air destratification by extraction

5.2 The state of art in heating

5.2.4 Radiant floor

- Significant upfront investment.
- Volumetric uniformization of temperature.
- Part of heat goes to occupants, the other directly up to ceiling.
- Silent operation.



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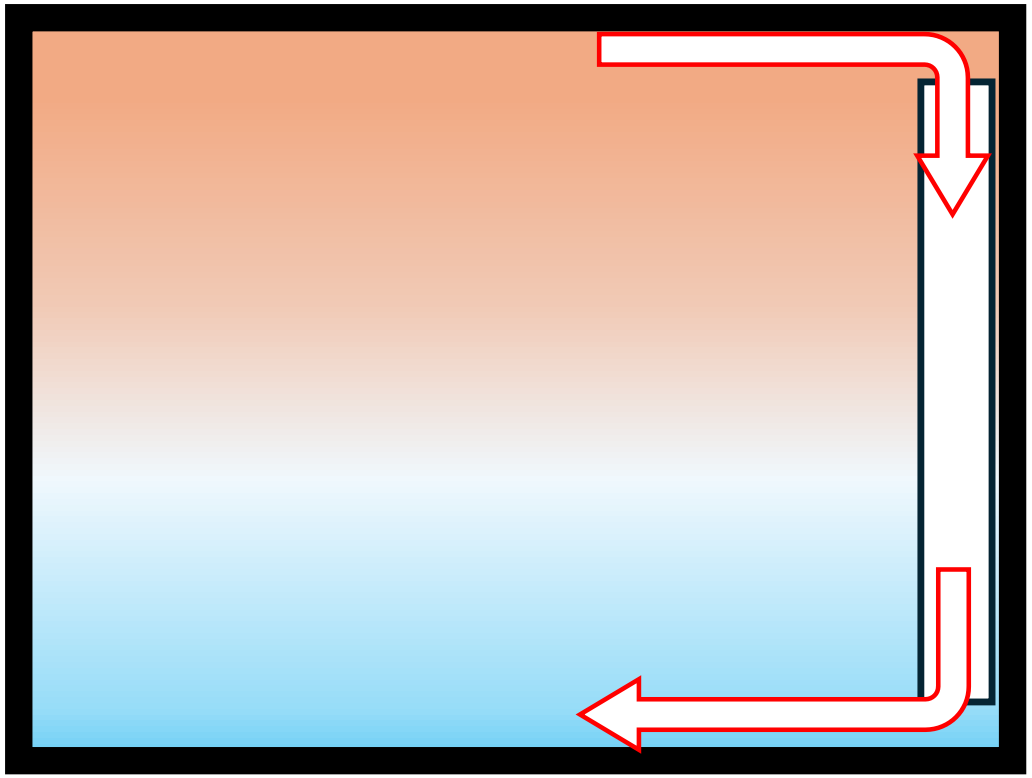
5. Air destratification by extraction

5.3 New: Destratification by extraction

- Extracting warm air from ceiling and spreading it to the floor, firstly under furniture.
- Highest efficacy.
- No draft created.
- Type of fan results in level of noise.



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5. Air destratification by extraction

5.3 New: Destratification by extraction

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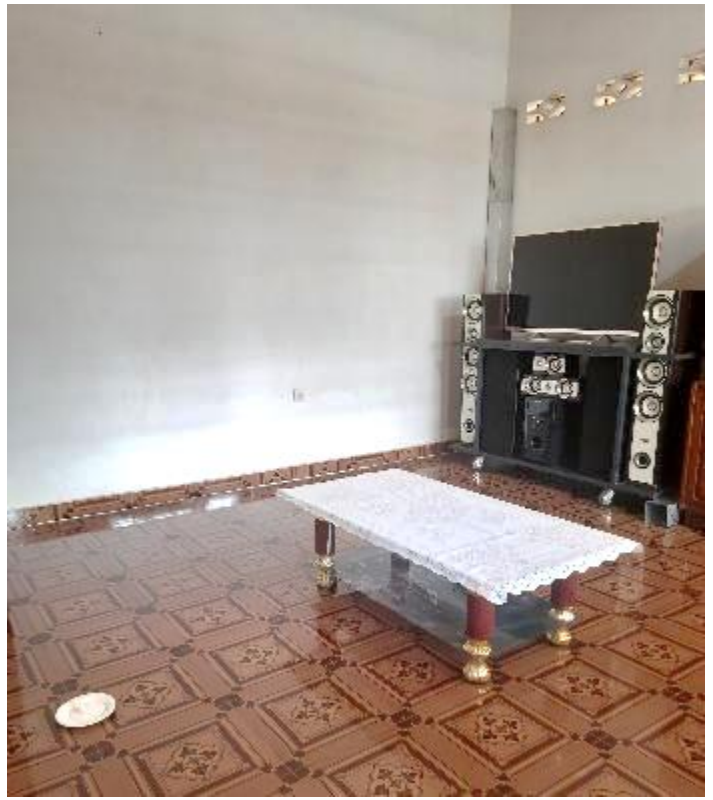
A DIY air destratifier placed in in a corner of room without furniture.

The same destratifier is patially hidden behind furniture.



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5. Air destratification by extraction

5.3 New: Destratification by extraction

Materialization of air flow 1

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5. Air destratification by extraction

5.3 New: Destratification by extraction

Materialization of air flow 2

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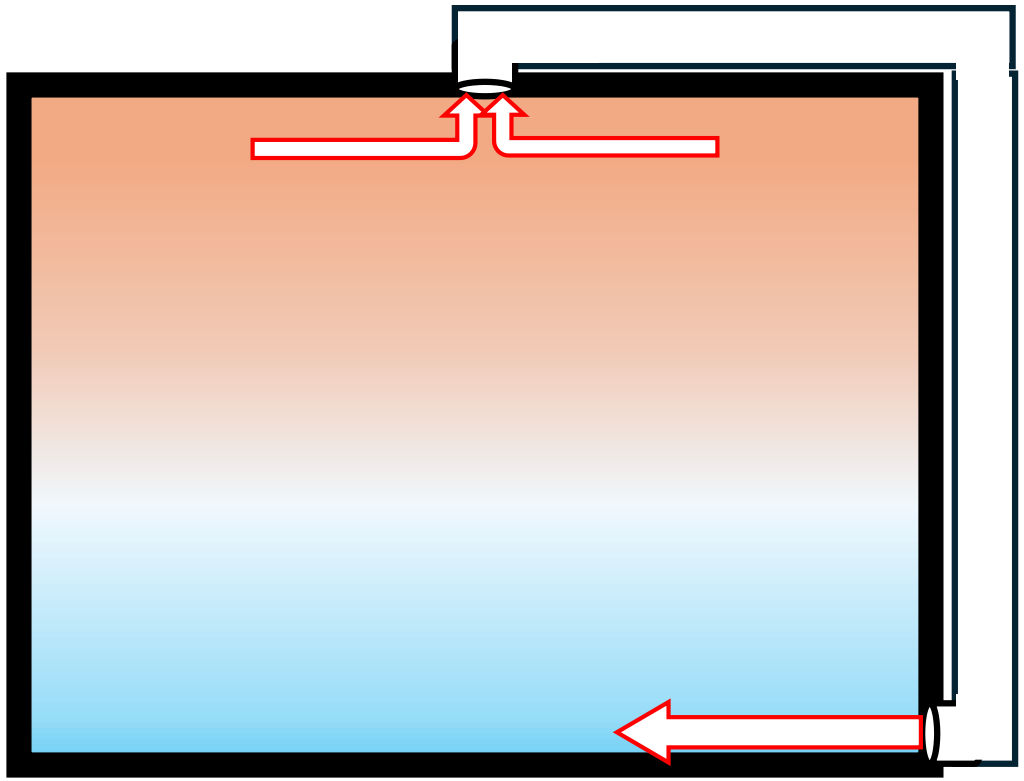
5. Air destratification by extraction

5.3 New: Destratification by extraction

Vertical duct can be hidden in ceiling and walls. Only air inlets and outlets are visible.



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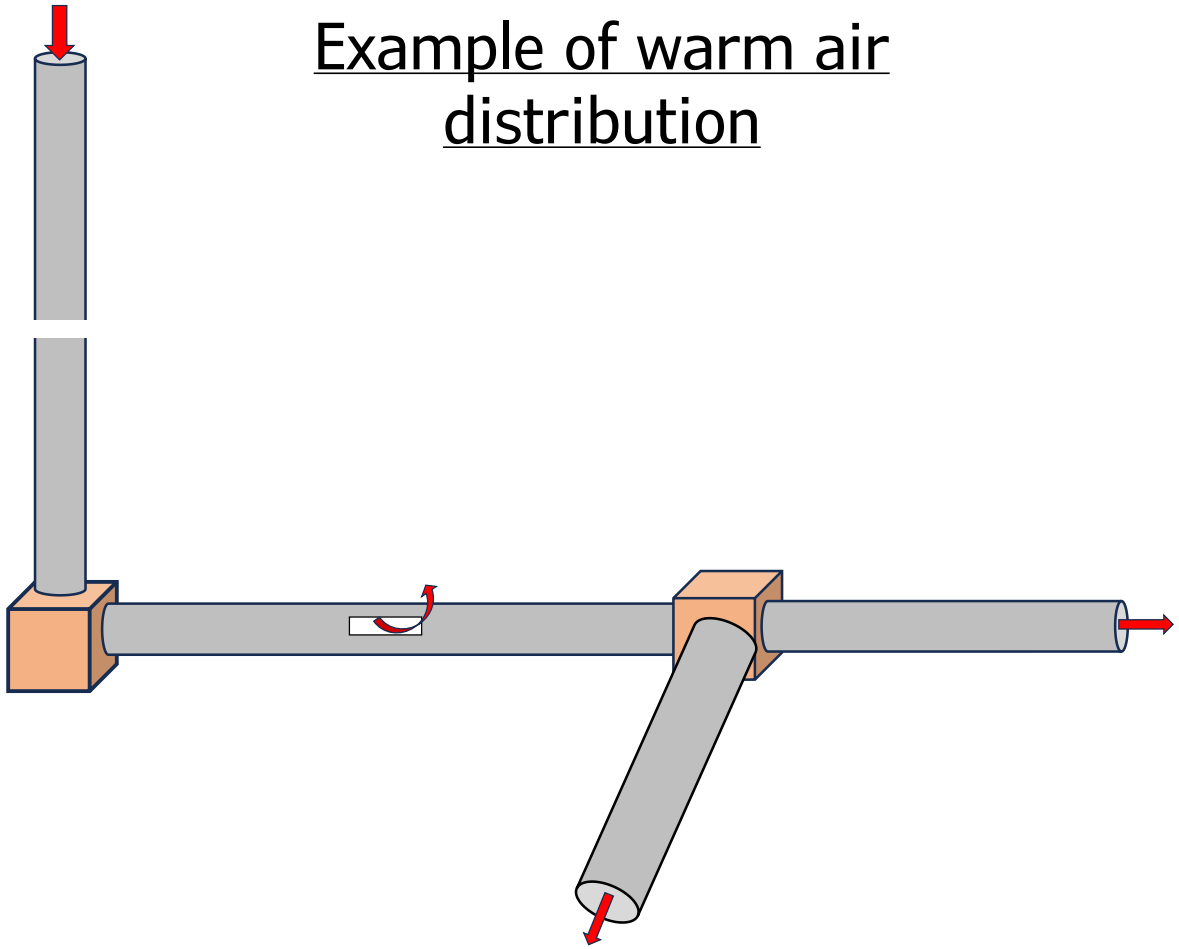
5. Air destratification by extraction

5.3 New: Destratification by extraction

Example of warm air distribution



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5. Air destratification by extraction

5.3 New: Destratification by extraction

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Heating furniture from within is a unic advantage!

Thermally speaking this is equivalent to lifting it to the ceiling level

5. Air destratification by extraction

5.4 Conclusion

- Destratification by extraction results in heating furniture from within: beds, seats, tables.
- The average temperature and heat losses decrease. It can improve the efficacy of radiant floors, by reorientation to furniture of heat which goes directly to ceiling.
- It results in increased thermal comfort for occupants, reduction of their energy bills, and of impact on the environment.

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Industrialized construction to solve the current global housing crisis

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