



Assessing ventilative cooling potential in Energy Performance regulations

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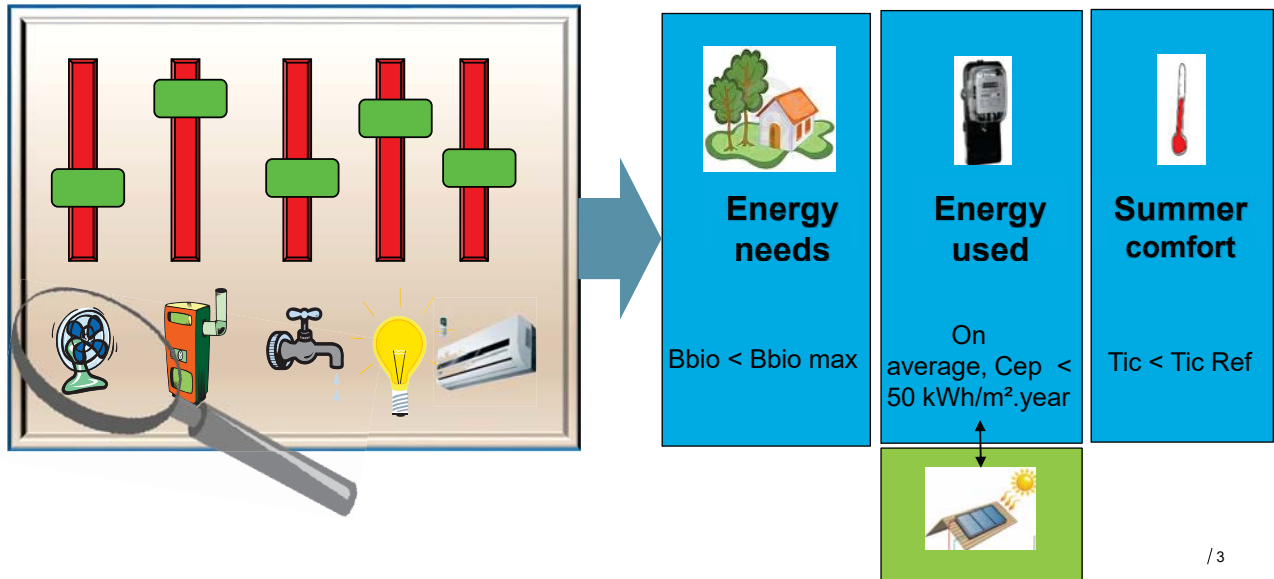
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Ventilative cooling in the French Regulation.

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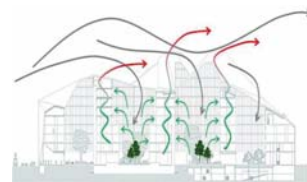
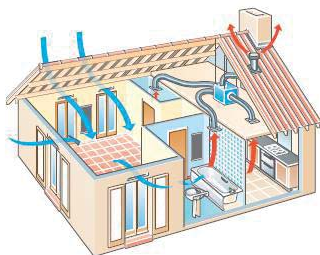
RT2012 : French thermal regulation



/3

Residential building : Decree of March 1982 : "Aeration of the housing must be general and permanent at least during the period when the outside temperature requires to keep the windows closed."

Other buildings : minimum air flow rate depending on the type of buildings



RT 2012

/4

1- Empirical model for monozone is used at each time step (1 hour)

$$Q_v = \left(C_0 \times A_{ouv} \times \sqrt{C_1 \times C_2 \times V^2 + C_3 \times h \times \Delta T} \right)$$

$C_0 = 1800$; $C_1 = 0.001$; $C_2 \geq 1$; $C_3 = 0.0035$; h : height of the opening ;

2 - A_{ouv} : depending on the external temperature, the internal external temperature difference and the type of windows.

3 - COMETh : COre for Modeling Energy and THERmal comfort

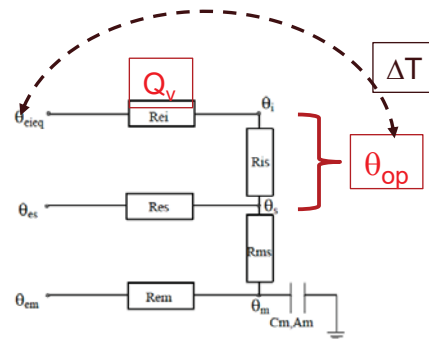
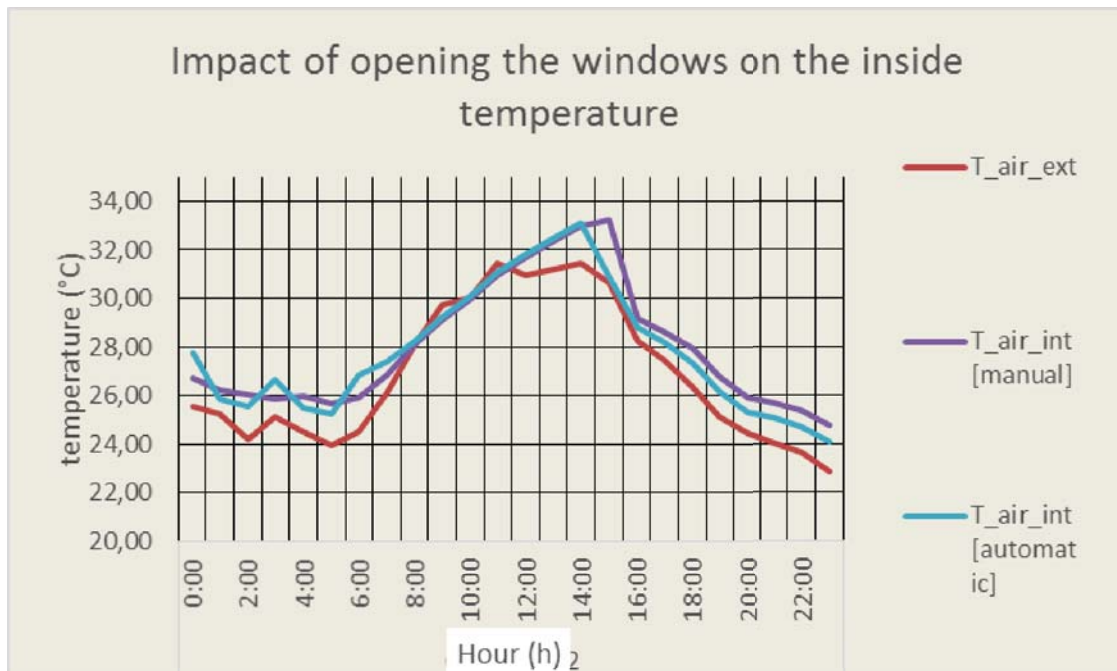


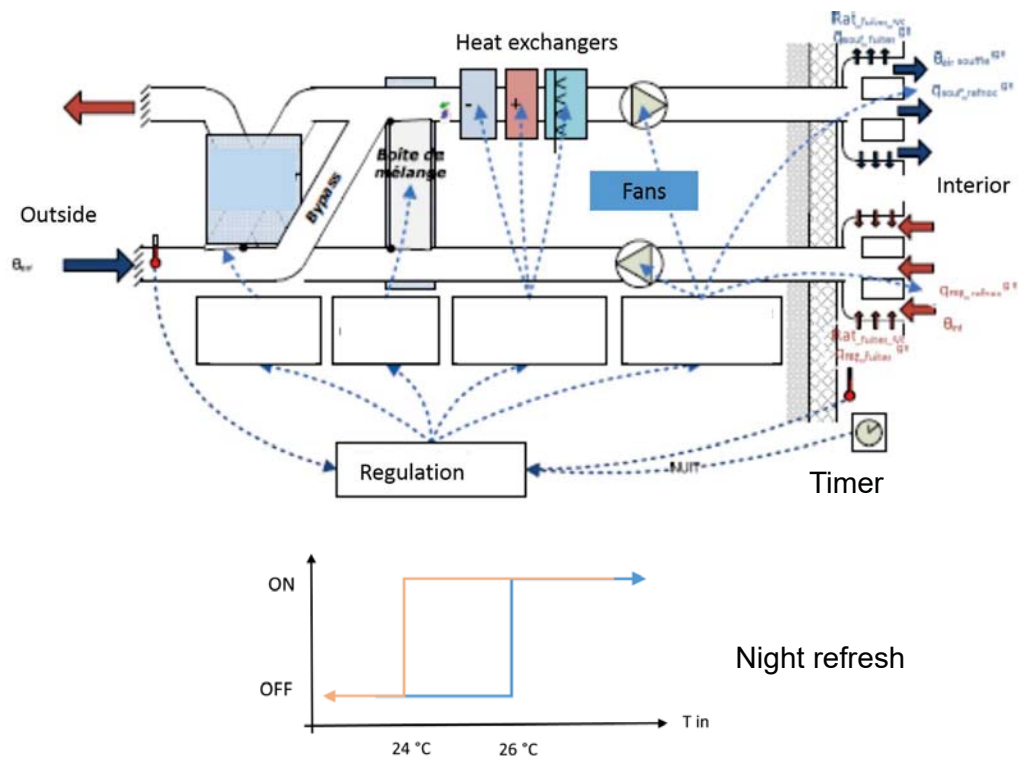
Figure 1 : SRC network

/ 5

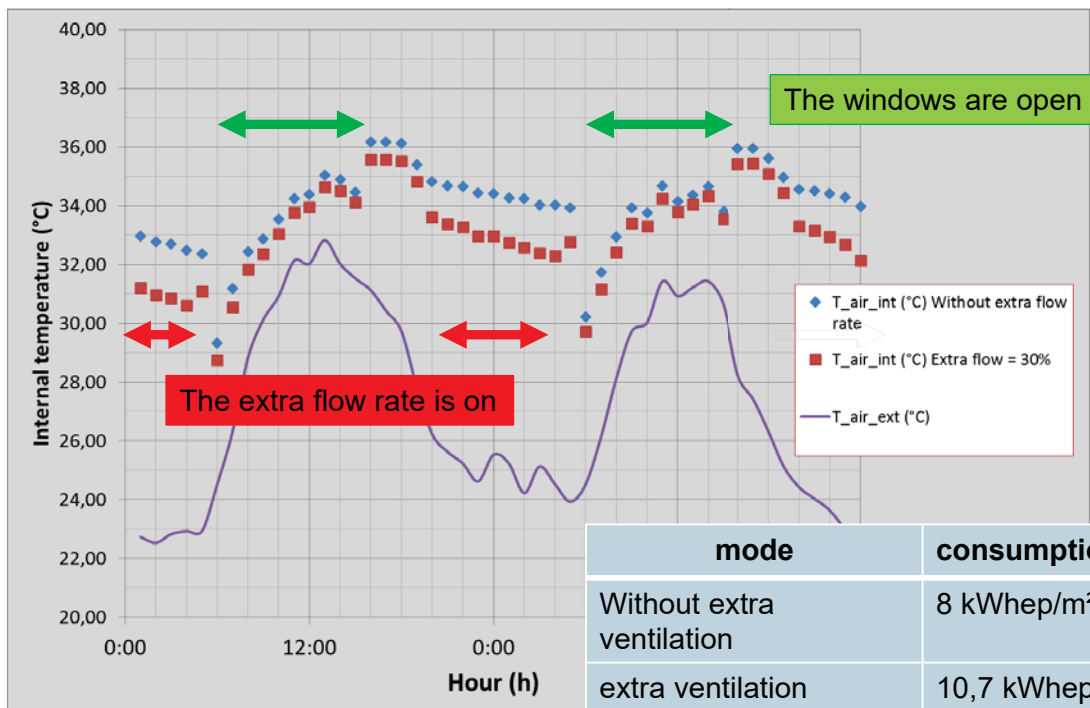
House in the south of France, (150m²; 1 level)



/ 6



/7



Ventilative cooling –i.e., the use of natural or mechanical ventilation strategies to cool indoor spaces– is already implemented in the French thermal regulation **RT 2012**, both for residential buildings and for commercial buildings.

Opening windows and night mechanical ventilation allow to reduce indoor temperatures and to maintain a comfortable thermal environment.

This allows to delay the startup of air-conditioning systems.

On cases presented and with our hypotheses, opening windows seems more effective and it does not consume energy.



/ 9



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RT 2012

<http://www.rt-batiment.fr/batiments-neufs/reglementation-thermique-2012/textes-de-references.html>

Bibliography

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