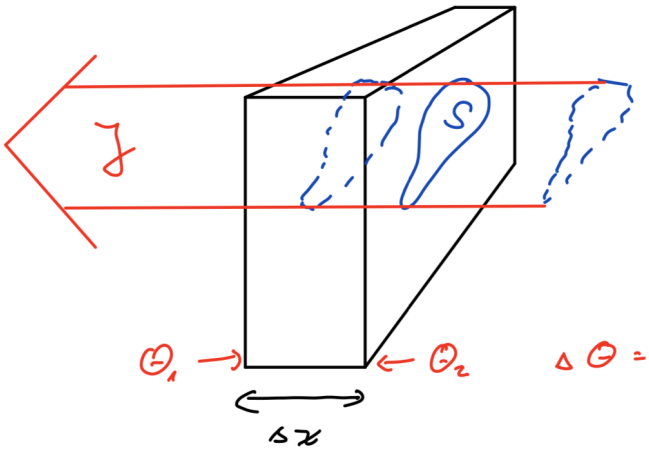


TRANSPORT — PROPRIETÉ — MOTEUR

$J = \lambda \cdot S \cdot \frac{\Delta\theta}{\Delta x}$

λ : Conductivité thermique

$\frac{\Delta\theta}{\Delta x}$: gradient Temp

GÉOM

Conduction

Transmission de l'agitation thermique sans déplacement de la matière

$$J = \lambda \cdot S \cdot \frac{\Delta\theta}{\Delta x}$$

$$[W] = \frac{W}{m \cdot k} \cdot m^2 \cdot \frac{k}{m}$$

$\lambda > 1$ Conducteurs

$\lambda \sim 0{,}2 - 0{,}6$ isolants

$\lambda < 0{,}6$ bon isolant

$0{,}02$

Resistance Thermique

$$J = \lambda S \frac{\Delta\theta}{\Delta x} \qquad d = \Delta x$$

$$\Delta\theta = \left(\frac{d}{\lambda}\right) \cdot \left(\frac{J}{S}\right)$$

I $\frac{W}{m^2}$

R $\frac{m^2 k}{W}$

- $\Delta\theta = R \cdot I$

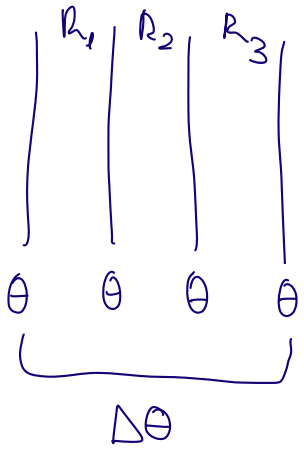
$$\Delta\theta = R \cdot I$$

$$U = R \cdot I$$

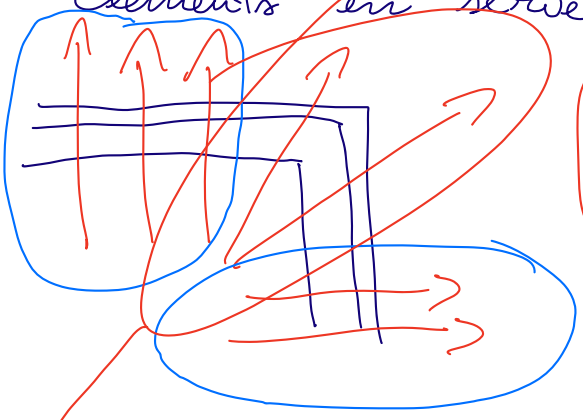
Mur maçonné épais
$\sim 0,5$ ↩
1 → isolé
2-4 → bien isolé
~ 1 → Voirage moderne

R_1 R_2 R_3

$$R_{TOT} = R_1 + R_2 + R_3 + \dots R_n$$



- Eléments en série



$$\Delta\theta_1 = R_1 \cdot I$$

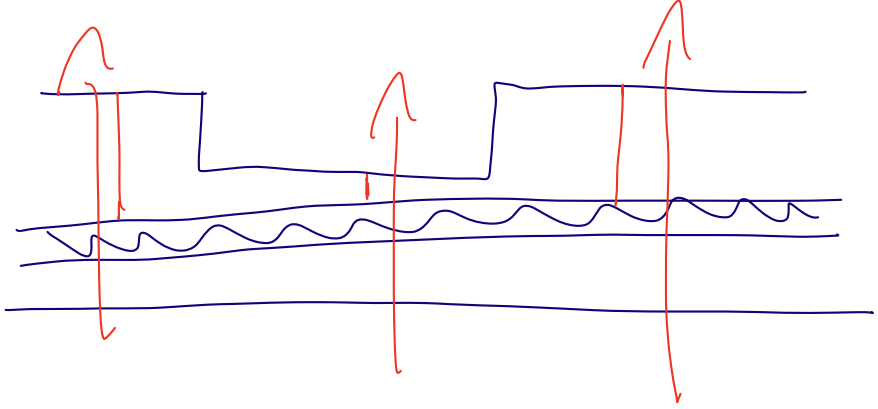
$$\Delta\theta_2 = R_2 \cdot I$$

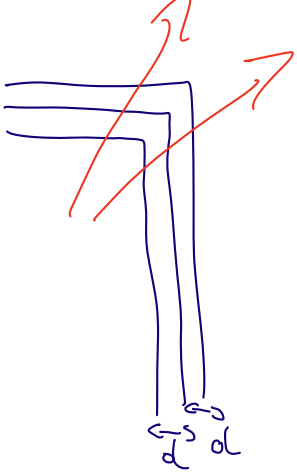
$|R_1|R_2|$
$\Delta\theta_1$ $\Delta\theta_2$

Valable seulement avec Flux parallèles

$$R_1 + R_2 = R_{TOT}$$

$$\Rightarrow R_1 + R_2 \neq R_{TOT}$$



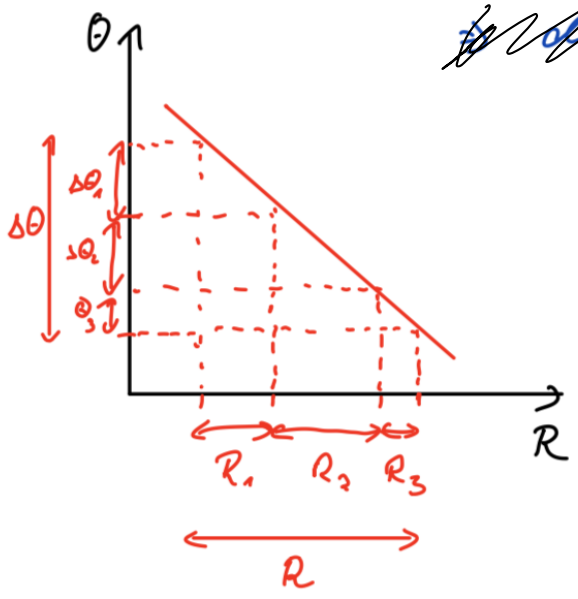


$R_{TOT} = \sum R_j \quad j = n^\circ \text{ mur}$

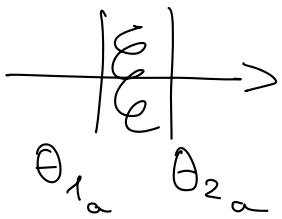
$\Delta\theta_{TOT} = R_{TOT} \cdot I$

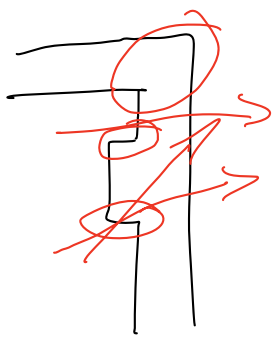
$I = \frac{J}{S} \quad \frac{W}{m^2} \qquad I = \frac{\Delta\theta}{R}$

$$J = \frac{1}{R} \cdot S \cdot \Delta\theta$$



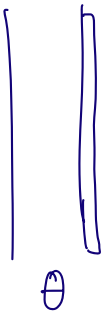
$R_a \quad \Delta\theta_a = \theta_{2a} - \theta_{1a}$



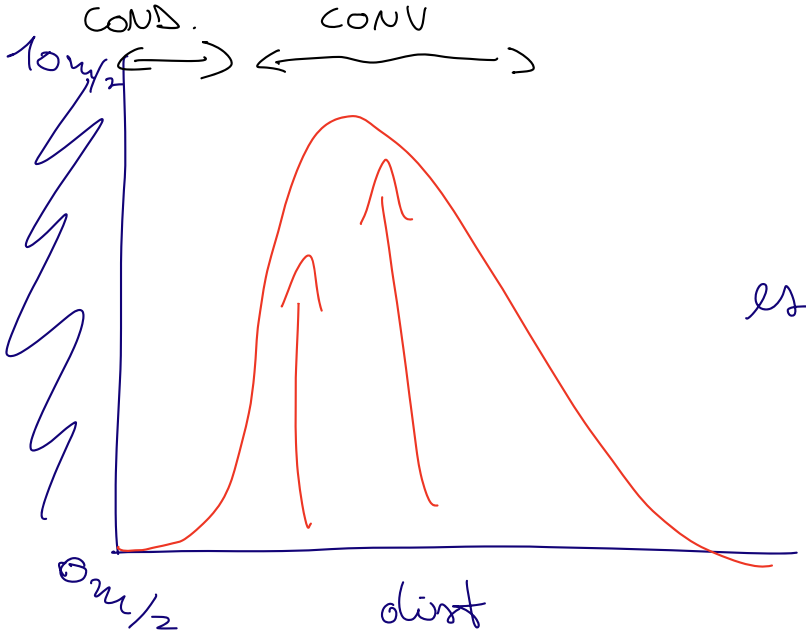


$$\frac{\Delta\theta}{R} = I \qquad \text{Valable si } I = \text{cste}$$

Couche limite thermique



est une fine couche de fluide située à proximité d'un mur (surface) où le transfert de chaleur est fait par CONDUCTION



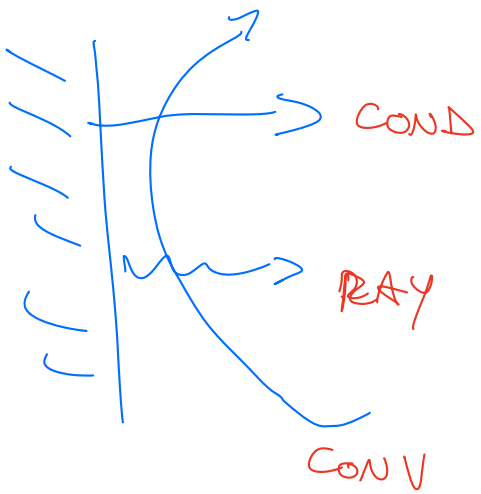
$Q_{COND} >>> Q_{CONV}$

est excellent isolant Thermique

0,1 mm et 10 mm

Epaisseur :

- Vitesse l'air
- gradient température $\left(\frac{\Delta\theta}{\Delta x}\right)$
- rugosité



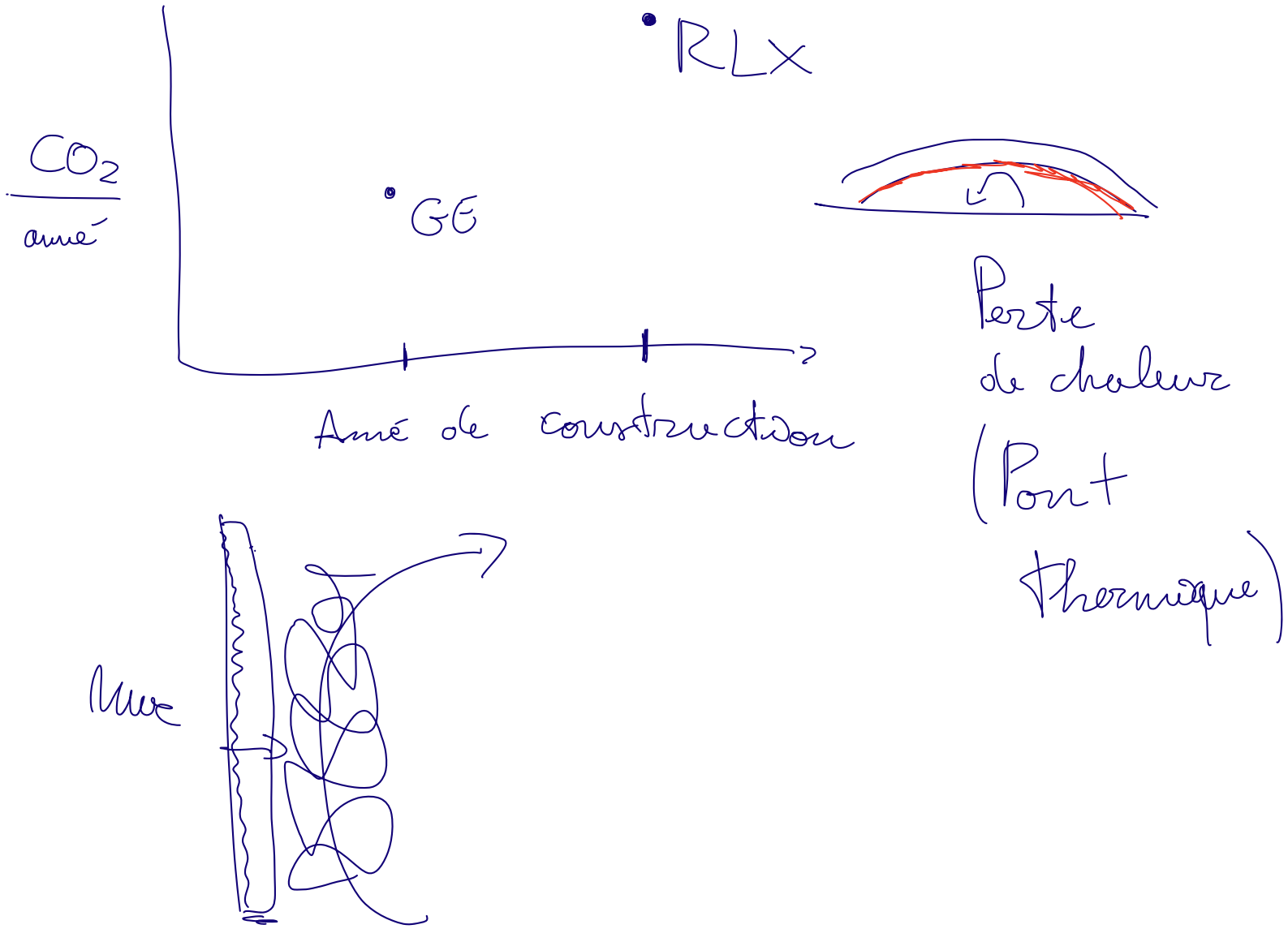
Coefficient de transfer thermique α

$$\alpha = \alpha_{COND} + \alpha_{CONV} + \alpha_{RAY}$$

$\alpha = 8 \frac{W}{m^2 K}$ INTERIEUR

$\alpha = 25 \frac{W}{m^2 K}$ EXT

Conduct thermique $U = \frac{1}{R_{TOT}}$


RLX
CO_2
année
GE
Année de construction
Perte de chaleur (Pont thermique)
Mur