Cours de Génie Climatique

Vidéo n°3

CTA 1 : soufflage

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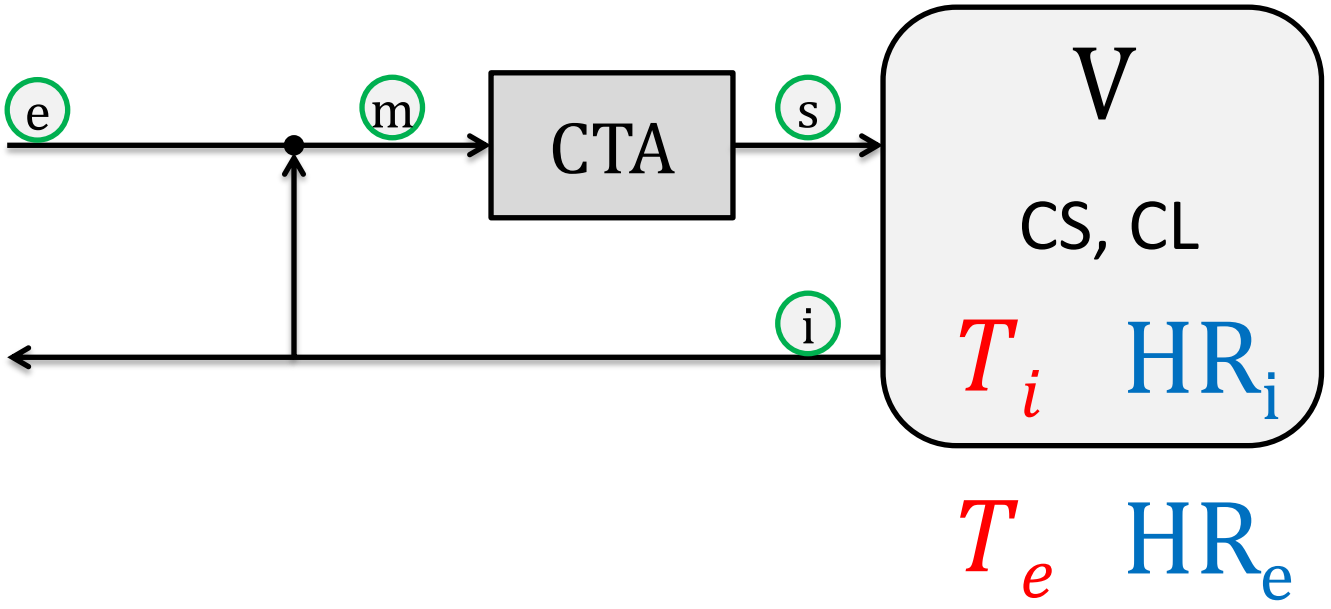
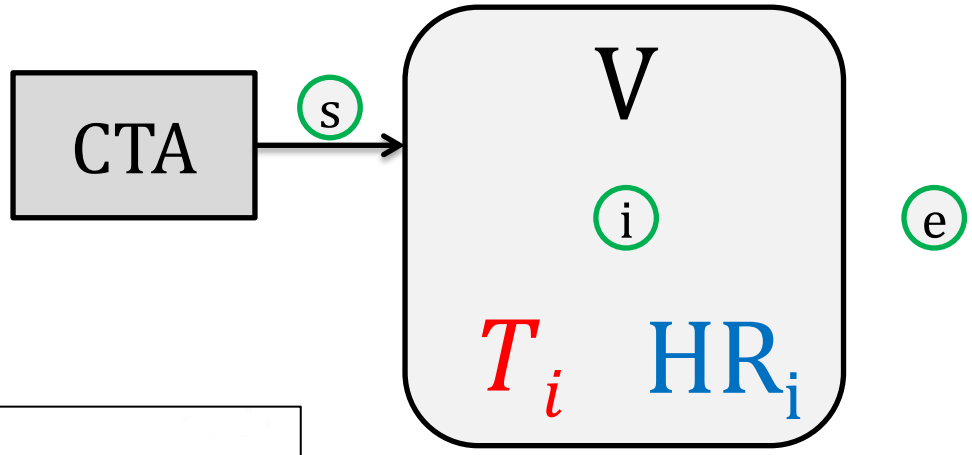
vidéo réalisée le 23/11/15



1) Identifier les besoins → CS, CL
2) Conditions de soufflage → s
3) Dimensionner la CTA → $m \rightarrow s$
4) Proportions du mélange → $e + i \rightarrow m$


CTA
s
V
i
e
T_i HR_i
T_e HR_e

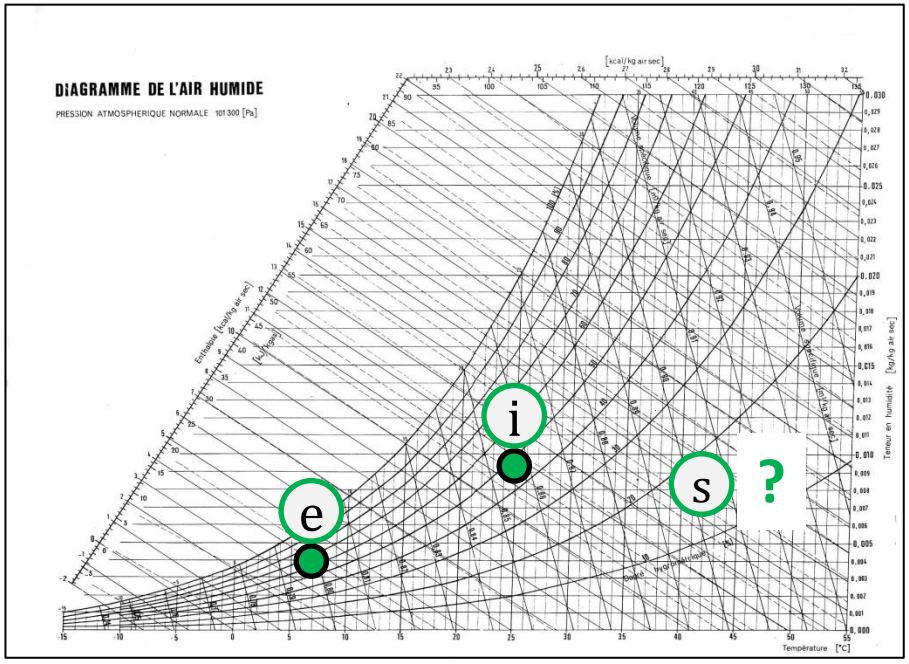
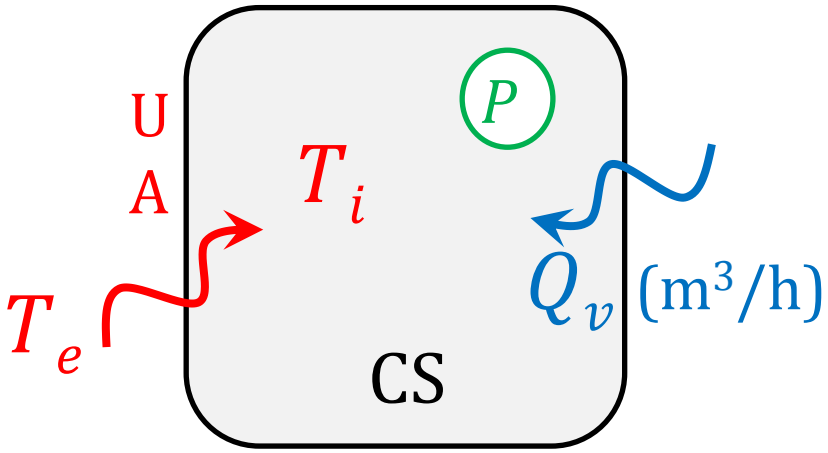
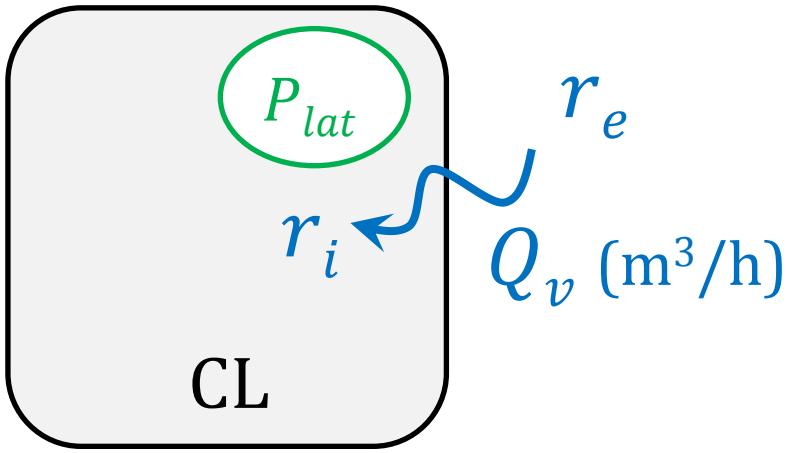


DIAGRAMME DE L'AIR HUMIDE
PRESSION ATMOSPHERIQUE NORMALE 101 300 [Pa]
Température [°C]
Teneur en humidité [kg/kg air sec]
i
e
s
?





$$CS = UA(T_e - T_i) + 0{,}34\ Q_v(T_e - T_i) + P$$

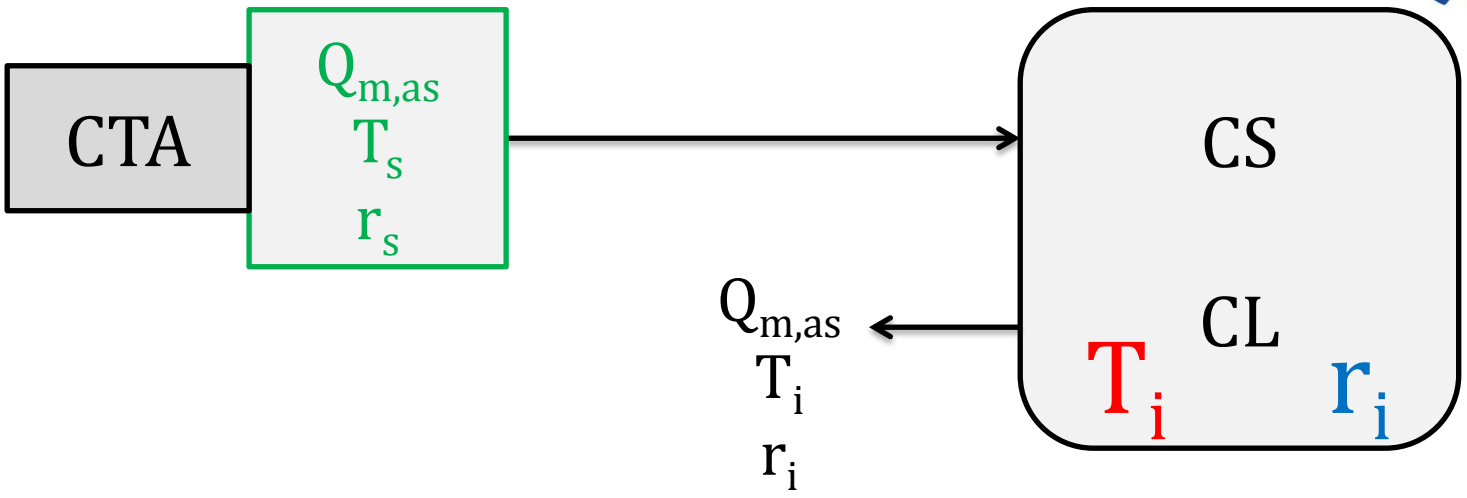
↓

(W)

$$CL = 0{,}34\ Q_v L_v(r_e - r_i) + P_{lat}$$

↓

(W)



Charges + apports de la CTA = 0

Charges	Apports de la CTA	Bilan	
CS	$Q_{m,as} c_{as} (T_s - T_i)$	$\mathrm{CS} + Q_{m,as}\, c_{as}\, (T_s - T_i) = 0$	(1)
CL	$Q_{m,as} L_v (r_s - r_i)$	$\mathrm{CL} + Q_{m,as}\, L_v\, (r_s - r_i) = 0$	(2)
CS + CL	$Q_{m,as}(h_s - h_i)$	$(\mathrm{CS} + \mathrm{CL}) + Q_{m,as}(h_s - h_i) = 0$	

(1) / (2) $\Rightarrow$ $r_s = r_i + \dfrac{(T_s - T_i)}{2500} \dfrac{\mathrm{CL}}{\mathrm{CS}}$

POLYTECH ANNECY-CHAMBÉRY

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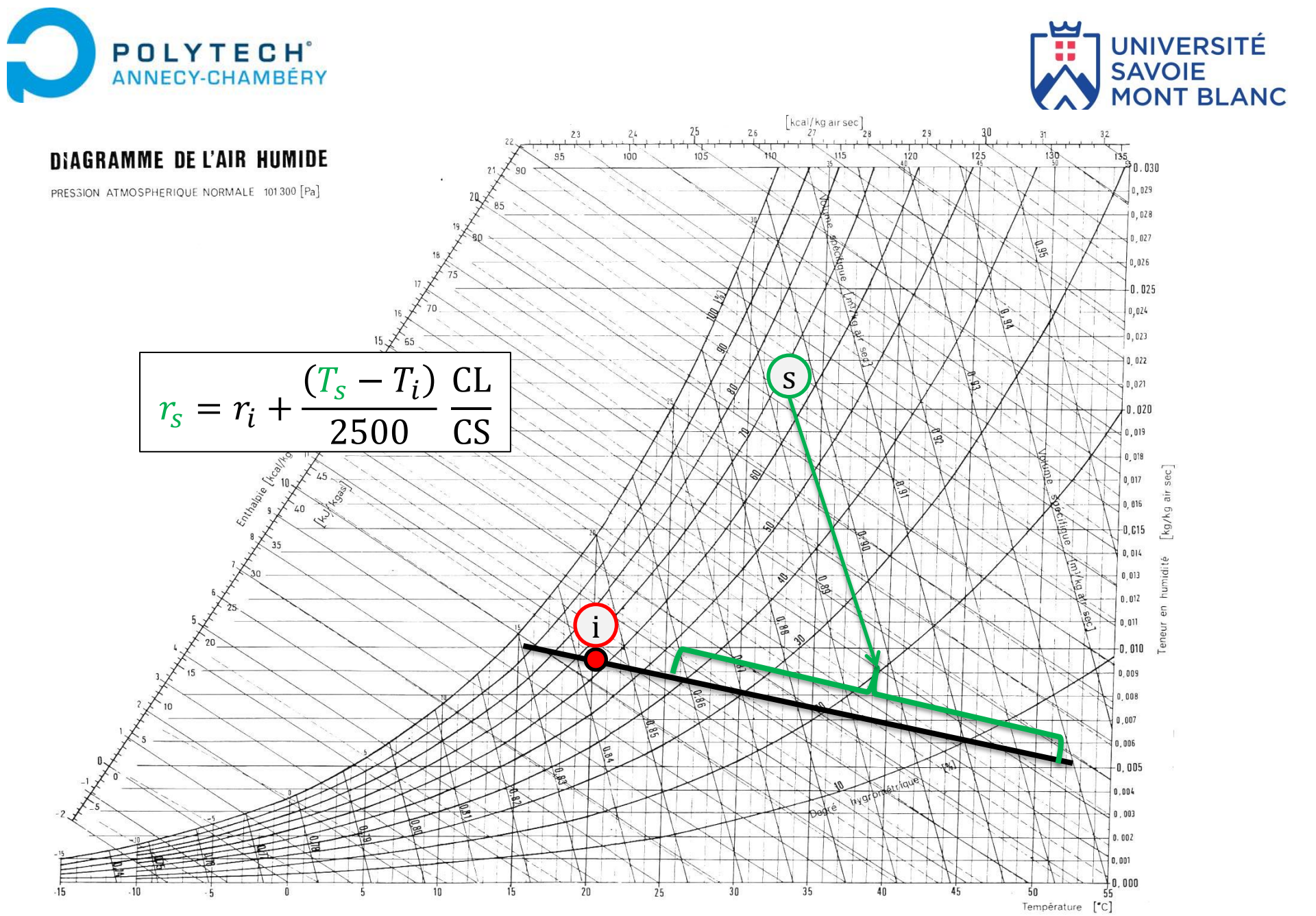

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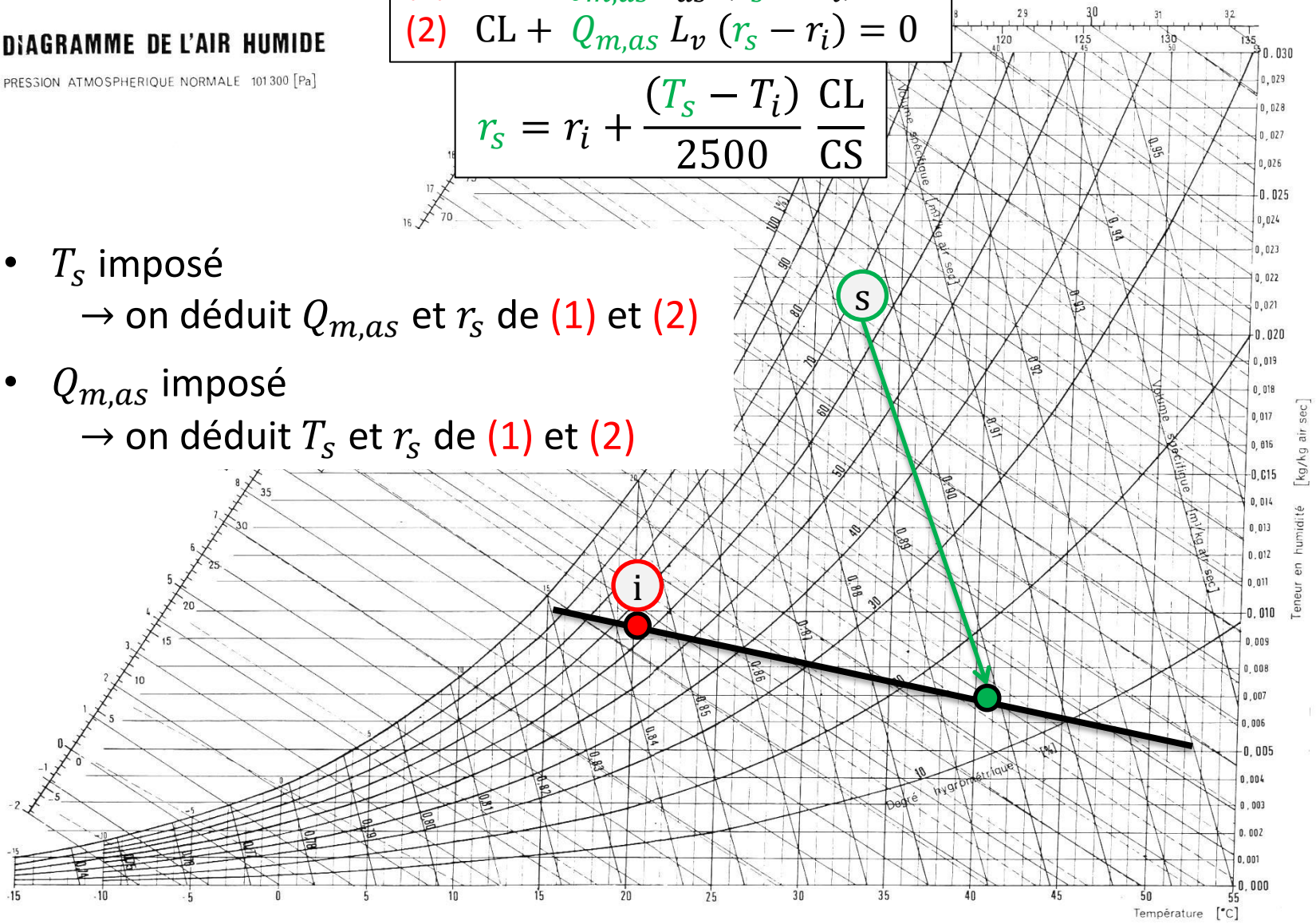
$$(1)\quad \mathrm{CS} + Q_{m,as}\, c_{as}\, (T_s - T_i) = 0$$
$$(2)\quad \mathrm{CL} + Q_{m,as}\, L_v\, (r_s - r_i) = 0$$

$$r_s = r_i + \frac{(T_s - T_i)}{2500}\,\frac{\mathrm{CL}}{\mathrm{CS}}$$

- T_s imposé
  → on déduit $Q_{m,as}$ et r_s de (1) et (2)
- $Q_{m,as}$ imposé
  → on déduit T_s et r_s de (1) et (2)



POLYTECH ANNECY-CHAMBÉRY

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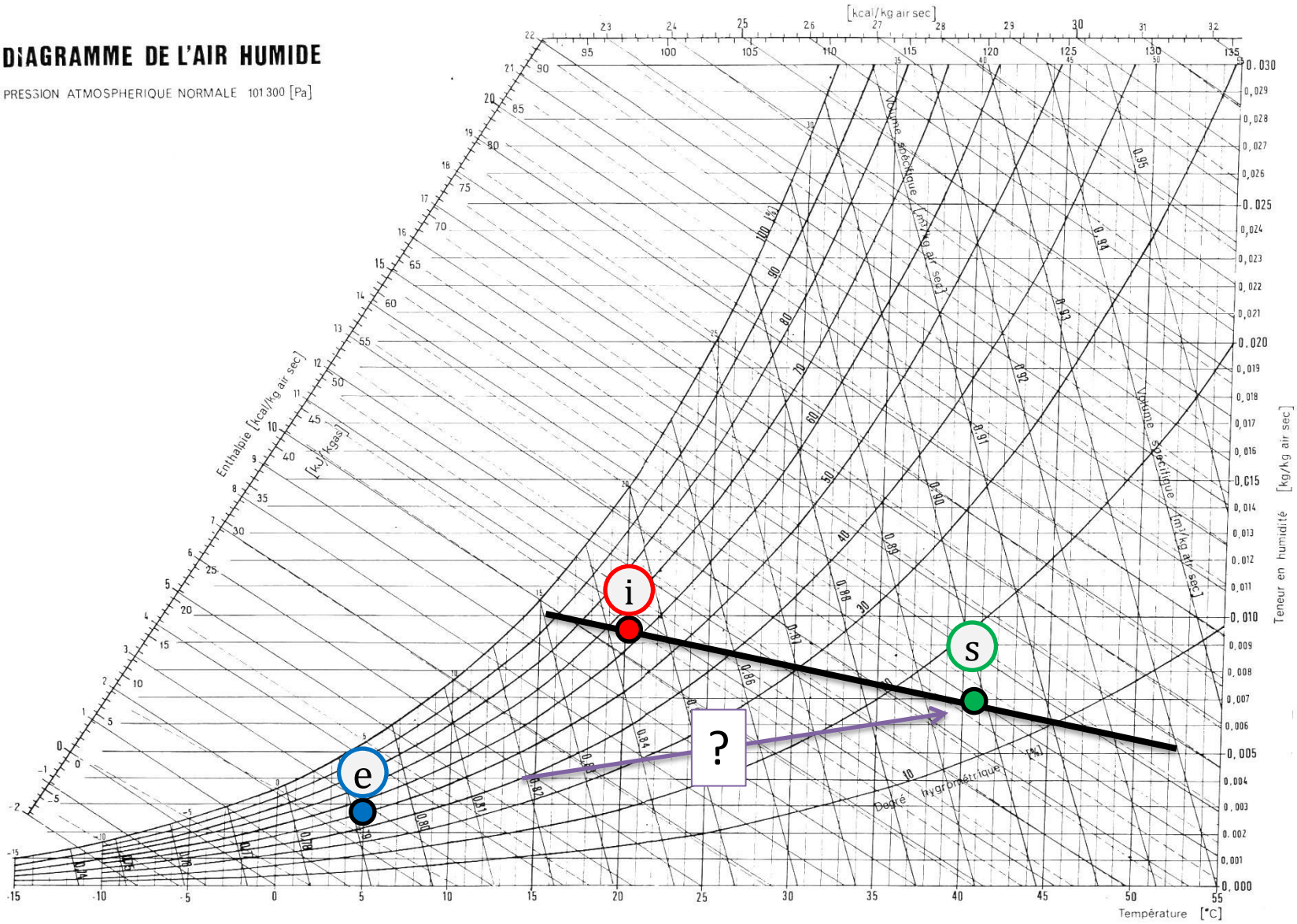
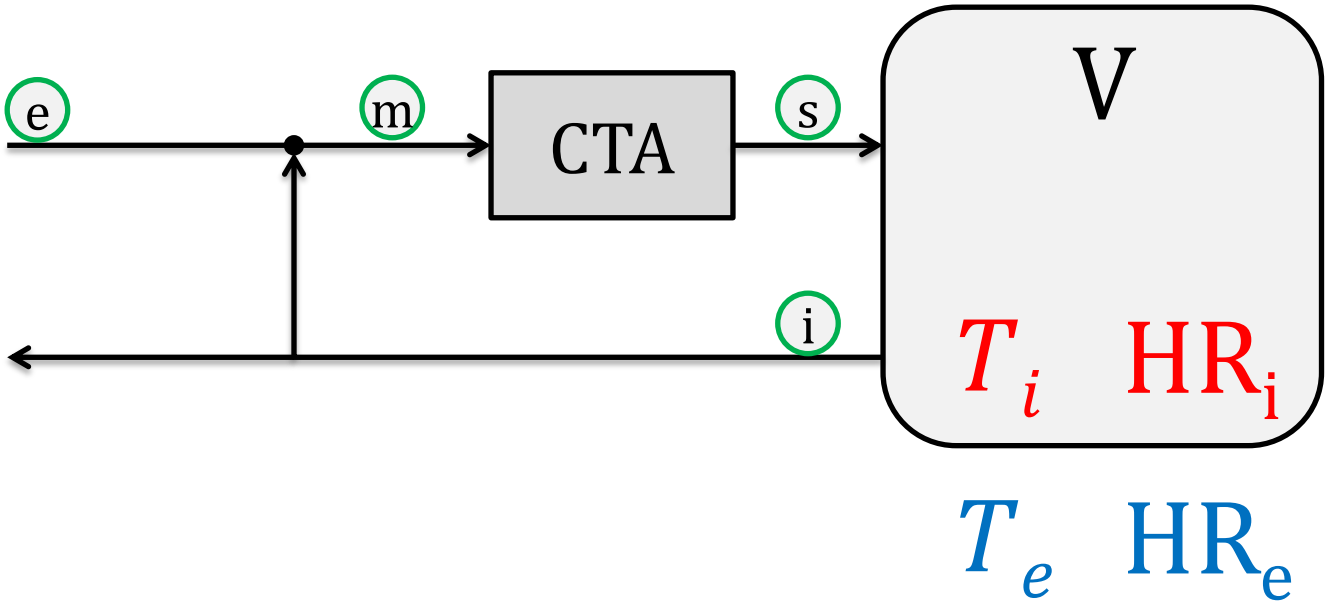
DIAGRAMME DE L'AIR HUMIDE

PRESSION ATMOSPHERIQUE NORMALE 101 300 [Pa]





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