Interrogation 2 micro2

Exercice 1 :

$P = 4k^{1,5} l^{0,5}$; $P_k = 2DA$; $P_l = 6DA$

On a $P = 67500$

① $\begin{cases} \min CT = 2k + 6l \\ S/c\ 67500 = 4k^{1,5} l^{0,5} \end{cases}$

$L = 2k + 6l + \lambda(67500 - 4k^{1,5} l^{0,5})$

$= 2k + 6l + 67500\lambda - 4k^{1,5} l^{0,5} \lambda$

$*\ L'_k = 0 \Rightarrow 2 - 6k^{0,5} l^{0,5} \lambda = 0$

$\Rightarrow \lambda = \frac{2}{6k^{0,5} l^{0,5}} = \frac{1}{3k^{0,5} l^{0,5}}$ ... ①

$*\ L'_l = 0 \Rightarrow 6 - 2k^{1,5} l^{-0,5} \lambda = 0$

$\Rightarrow \lambda = \frac{6}{2k^{1,5} l^{-0,5}} = \frac{3}{k^{1,5} l^{-0,5}}$ ... ②

$L'_\lambda = 0 \Rightarrow 67500 - 4k^{1,5} l^{0,5} = 0$ ... ③

① = ② $\Rightarrow \frac{1}{3k^{0,5} l^{0,5}} = \frac{3}{k^{1,5} l^{-0,5}}$

$\Rightarrow \frac{k^{-0,5}}{3 l^{0,5}} = \frac{3 l^{0,5}}{k^{1,5}}$

$\Rightarrow \boxed{k = 9l}$ ... ④

On remplace ④ dans ③ :

$67500 - 4(9l)^{1,5} l^{0,5} = 0$

$\Rightarrow 67500 = 108 l^2$

$\Rightarrow l^2 = \frac{67500}{108} = 625$

$\Rightarrow \boxed{l = 25}$

④ $\rightarrow k = 9(25) \Rightarrow \boxed{k = 225}$

② $\min CT = 2(225) + 6(25)$

$\boxed{\min CT = 600DA}$

③ $l \nearrow 20\% \Rightarrow l \nearrow 5$.

$TMST_{l/k} = \frac{2k^{1,5} l^{-0,5}}{6k^{0,5} l^{0,5}} = \frac{k}{3l}$

$= \frac{225}{3(25)} = \boxed{3}$

$l \nearrow 1 \rightarrow k \searrow 3$

$l \nearrow 5 \rightarrow \boxed{k \searrow 15}$

④ $Rd = \min CT = 600DA$.

$Rd \nearrow 10\% \longrightarrow Rd \nearrow 60DA$.

$\lambda = \frac{P_{mgk}}{Rk} = \frac{6k^{0,5} l^{0,5}}{2} = 3(225)^{0,5}(25)^{0,5}$

$\boxed{\lambda = 225}$

$\lambda = \frac{\Delta P}{\Delta Rd} \Rightarrow 225 = \frac{\Delta P}{60}$

$\Rightarrow \boxed{\Delta P = 13500}$

Exercice ② :

$CT = 2p^3 - 12p^2 + 50p$

① $CM = \frac{CT}{p} = \frac{2p^3 - 12p^2 + 50p}{p}$

$\Rightarrow \boxed{CM = 2p^2 - 12p + 50}$

$*\ Cmg = CT' \Rightarrow \boxed{Cmg = 6p^2 - 24p + 50}$

② Méthode ①:

Cn est minimal $\Rightarrow Cn' = 0$

$\Rightarrow (2p^2 - 12p + 50)' = 0$

$\Rightarrow 4p - 12 = 0$

$\Rightarrow p = \frac{12}{4}$

$\Rightarrow \boxed{p = 3}$

Méthode ②:

Cn est minimal $\Rightarrow Cmg = Cn$

$\Rightarrow 6p^2 - 24p + 50 = 2p^2 - 12p + 50$

$\Rightarrow 4p^2 - 12p = 0$

$\Rightarrow p(4p - 12) = 0$

$\Rightarrow \begin{cases} p = 0 \text{ (rejetée)} \\ 4p - 12 = 0 \end{cases}$

$\Rightarrow p = \frac{12}{4}$

$\Rightarrow \boxed{p = 3}$

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③ Cmg est minimal $\Rightarrow Cmg' = 0$

$\Rightarrow (6p^2 - 24p + 50)' = 0$

$\Rightarrow 12p - 24 = 0$

$\Rightarrow p = \frac{24}{12}$

$\Rightarrow \boxed{p = 2}$