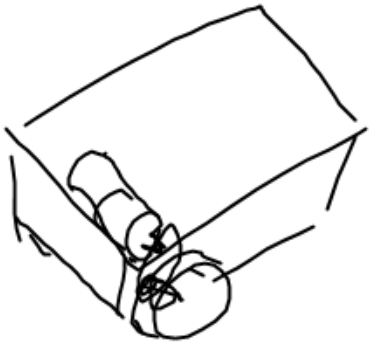
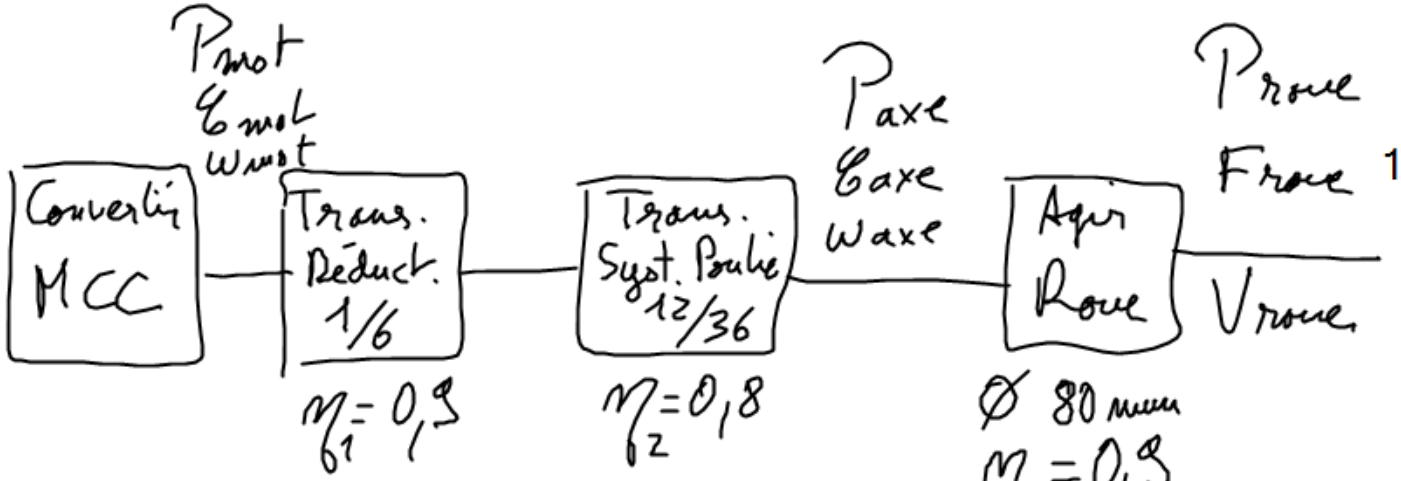




$F_{roue} = 5\ N$

$V_{roue} = 2\ m/s$

1. ω_{axe} ?

$V = \omega . R$

$\omega_{axe} = \frac{V_{roue}}{R}$

$\omega_{axe} = \frac{2}{\left(\frac{80.10^{-3}}{2}\right)} = 50\ rad/s$

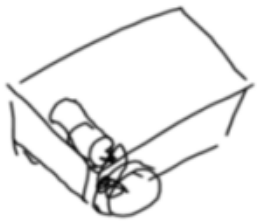
2. P_{axe} ? $\eta = \frac{P_s}{P_e}\left(\frac{P_u}{P_a}\right)$ $P_{axe} = \frac{P_{roue}}{\eta_3}$

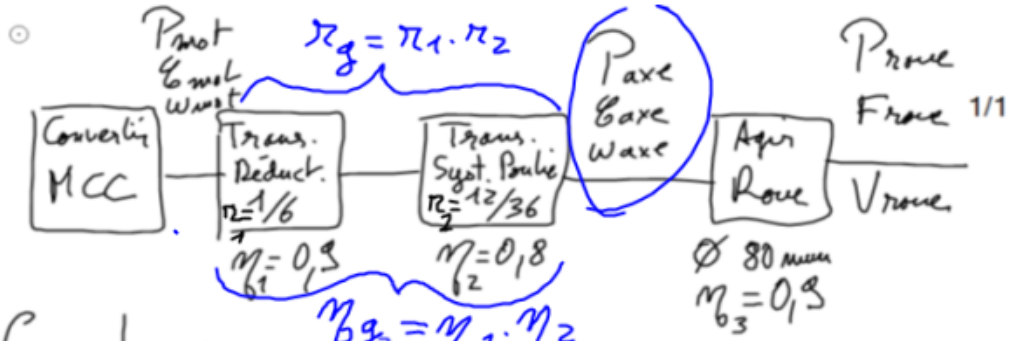
$P_{axe} = \frac{5.2}{0,9} \simeq 11,1\ W$

3. C_{axe} ?

$P = C.\omega$ $C_{axe} = \frac{P_{axe}}{\omega_{axe}}$

$C_{axe} = \frac{11,1}{50} \simeq 0,222\ N.m$





$\eta_g = \eta_1 \cdot \eta_2$

$F_{roue} = 5\ N$

$V_{roue} = 2\ m/s$

1. ω_{axe} ?

$V = \omega . R$

$\omega_{axe} = \frac{V_{roue}}{R}$

$\omega_{axe} = \frac{2}{\left(\frac{80.10^{-3}}{2}\right)} = 50\ rad/s$

4. ω_{mot} ?

$n_g = \frac{\omega_s}{\omega_e}$ $\quad \omega_{mot} = \frac{\omega_{axe}}{n_1 . n_2}$ $\quad \omega_{mot} = \frac{50}{\left(\frac{1}{6} \cdot \frac{12}{36}\right)} \simeq 900\ rad/s$

$\simeq 8590\ tr/min$

$n = \frac{\omega_{axe}}{\omega_{mot}}$

5. C_{mot} ? (sans ω_{mot} !)

$\eta = \frac{P_{axe}}{P_{mot}}$ $\quad \eta = \frac{C_{axe} . \omega_{axe}}{C_{mot} . \omega_{mot}}$ $\quad \eta = \frac{C_{axe}}{C_{mot}} . n$

$C_{mot} = \frac{C_{axe} . n_g}{\eta_g}$

$C_{mot} = \frac{0,222 . \left(\frac{1}{6} \cdot \frac{12}{36}\right)}{0,9 . 0,8}$

$\simeq 0,0171\ N.m$

6. P_{mot} ?

$P_{mot} = C_{mot} . \omega_{mot}$

$P_{mot} = 0,0171 . 900 \simeq 15,4\ W$

$$C = I \cdot t$$

Ah, A, h

$$\mathcal{E} = P \cdot t$$

Wh, J, W, s, h

$$\mathcal{E} = U \, I \, t$$

Wh, V, A, h

$$\mathcal{E} = U \cdot C$$

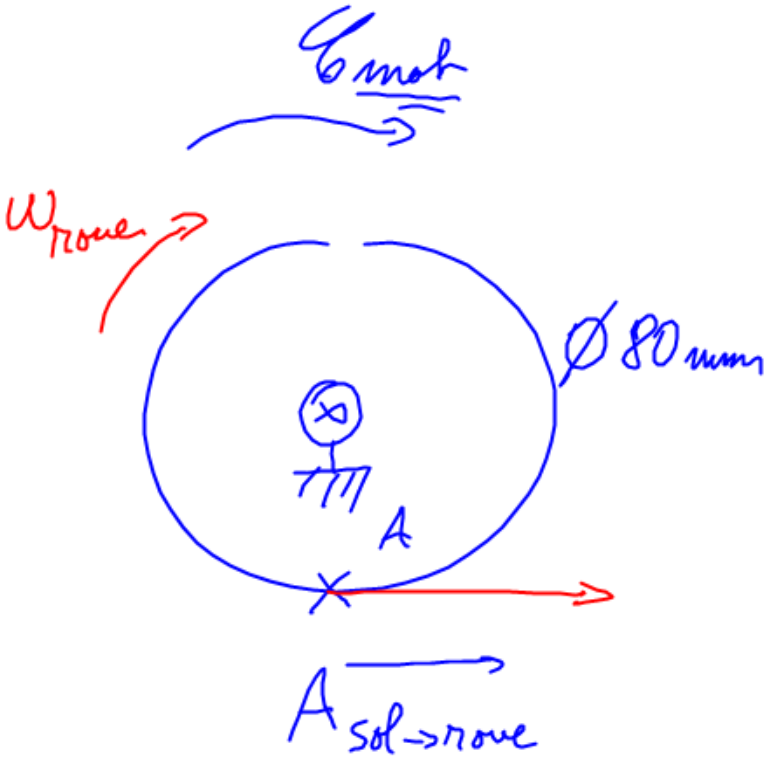
Wh, V, A.h

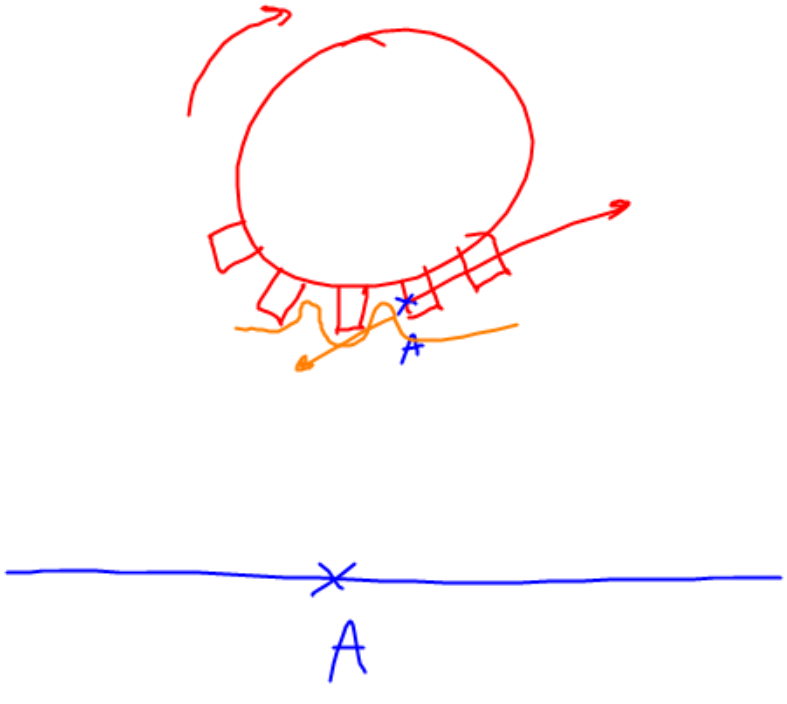
$$1\,A.s = 1\,C$$

$$1\,A.s = \frac{1}{3600}\,A.h$$

$$1\ m/s = 3600\ m/h$$

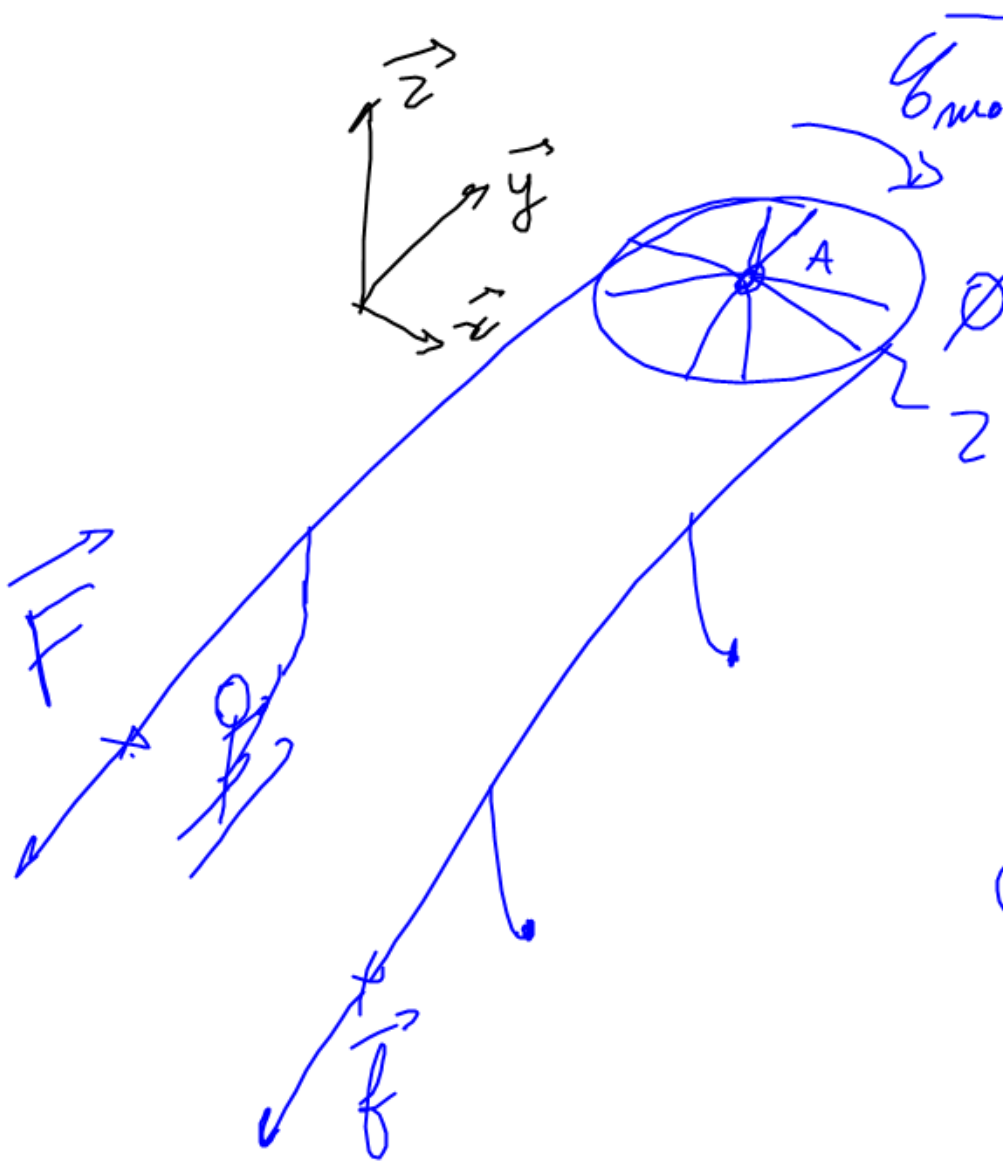
$$= 3{,}6\ km/h$$





$$\left\| \overrightarrow{C_{mot}} \right\| = \left\| \overrightarrow{A_{sol \to roue}} \right\| \cdot \frac{\varnothing}{2} \qquad \left\| \overrightarrow{C_{mot}} \right\| = 5 \cdot \frac{80.10^{-3}}{2}$$

$$\simeq 0,2 \text{ Nm}$$



$\vec{\mathcal{G}}_{mot}$

$\sum \mathcal{M}_A \vec{F} = \vec{0}$

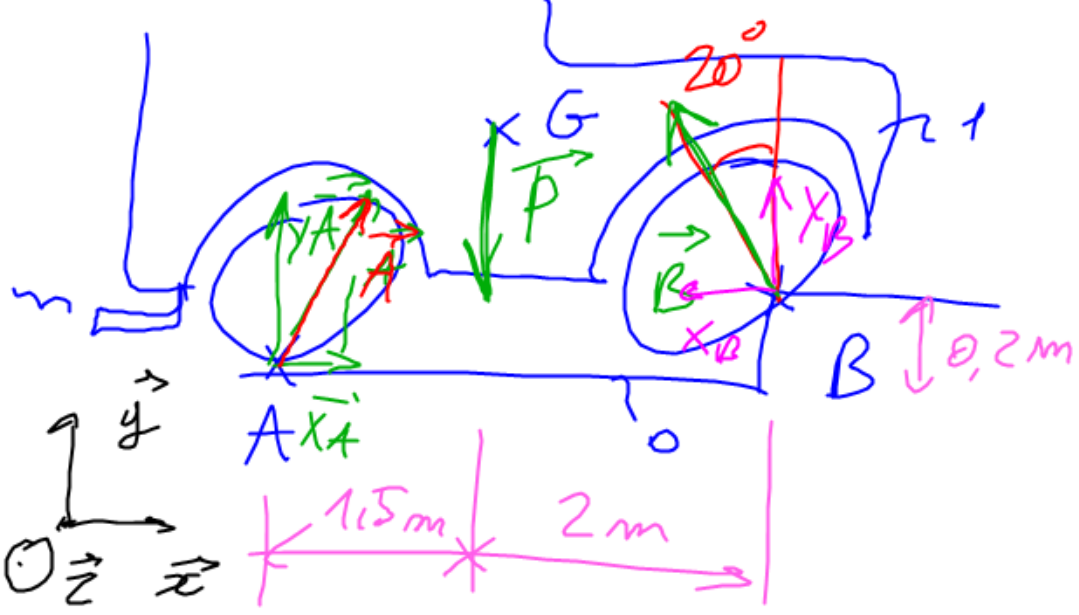
$\mathcal{M}_A \vec{F} + \mathcal{M}_A \vec{f} + \vec{\mathcal{G}}_{mot} = \vec{0}$

$\| \vec{\mathcal{G}}_{mot} \| = \| \vec{F} \| \cdot \frac{\varnothing}{2} - \| \vec{f} \| \cdot \frac{\varnothing}{2}$

$$\mathcal{G}_{2\to 1} = \begin{matrix} \vec{F} & \mathcal{M}_A \vec{F} \end{matrix}$$

$$\begin{matrix} 0 & 0 \\ 0 & 0 \\ 0 & -(F-f)\frac{\varnothing}{2} \end{matrix}_R$$

A



Placer $\vec{P}$ (2000 daN).

$\vec{A}$ et $\vec{B}$ sachant :

à l'aide du moment dynamique projeté sur $\vec{z}$ en A, calculer X_B :

$$\{\mathcal{T}_{0\to 1}\} = \begin{Bmatrix} X_A & 0 \\ Y_A & 0 \\ 0 & 0 \end{Bmatrix}_A$$

$$\{\mathcal{T}_{0\to 1}\} = \begin{Bmatrix} -X_B & 0 \\ Y_B & 0 \\ 0 & 0 \end{Bmatrix}_B$$

$\Sigma \overrightarrow{M_A F} = \vec{0}$

$\overrightarrow{M_A A} + \overrightarrow{M_A P} + \overrightarrow{M_A B} = \vec{0}$

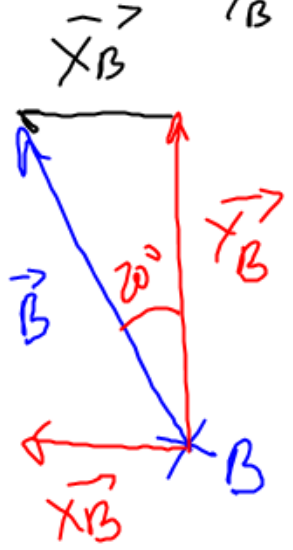
($\overrightarrow{M_A A} = \vec{0}$)

$\Sigma \overrightarrow{M_A F} \cdot \vec{z} = 0$:

$-1,5 \cdot 2000 + 0,2 \cdot X_B + 3,5 Y_B = 0$

TOA

$\tan 20 = \frac{X_B}{Y_B}$



$X_B = Y_B \cdot \tan 20$

$\{\mathcal{T}_{0\to 1}\} = \begin{Bmatrix} X_B & 0 \\ Y_B & 0 \\ 0 & 0 \end{Bmatrix}_B$

$\sum \overrightarrow{M_A F} = \vec{0}$

$\overrightarrow{M_A A} + \overrightarrow{M_A P} + \overrightarrow{M_A B} = \vec{0}$

$\vec{0}$

$\sum \overrightarrow{M_A F} \cdot \vec{z} = 0$:

$-1,5 \cdot 20000 + 0,2 \cdot X_B + 3,5 Y_B = 0$

$X_B = Y_B \cdot \tan 20$

$-1,5 \cdot 20000 + 0,2 \cdot (Y_B \cdot \tan 20) + 3,5 Y_B = 0$

$\| \vec{B} \| = \sqrt{X_B^2 + Y_B^2}$

$X_B = \dfrac{1,5 \cdot 20000}{(3,5 + 0,2 \tan 20)} \simeq 8400\ N$