

قوانين ميكانيكا الآلات II

أنواع الحاكمت:

: wattergovernot 1.1

$$F_c = ma_n \quad , \quad a_n = \frac{v^2}{r} \quad , \quad F_c = m * \frac{v^2}{r} \quad , \quad a = \frac{\omega^2 r^2}{r} = \omega^2 r$$

$$\Rightarrow F_c = m\omega^2 r \quad , \quad h = \frac{g}{\omega^2}$$

$$\frac{N_2}{N_1} = \sqrt{\frac{h_1}{h_2}} \quad , \quad per = \left(\frac{N_2 - N_1}{N_1} \right) * 100$$

: portergovernot 1.2

$$h = \left(\frac{m + \frac{M}{2} (1 + q)}{m} \right) * \frac{g}{\omega^2} \quad , \quad q = \frac{\tan \beta}{\tan \alpha}$$

$$\omega_{max}^2 = \frac{m + \frac{M+F/g}{2} (1 + q)}{m} * \frac{g}{h}$$

مع الاحتكاك:

$$\omega_{min}^2 = \frac{m + \frac{M-F/g}{2} (1 + q)}{m} * \frac{g}{h}$$

$$R_\omega = \omega_{max} - \omega_{min}$$

$$\sum M_1 = 0$$

: Hartnell 1.3

$$F_{C_1} * y \cos \theta_1 = mg \sin \theta_1 + \frac{F_{s1} + Mg}{2} * x \cos \theta_1 \quad : \text{الوضع الأدنى}$$

$$\frac{h_1}{x} = \frac{r - r_1}{y}$$

$$F_{C_2} * y \cos \theta_2 + mg \sin \theta_2 = \frac{F_{s2} + Mg}{2} * x \cos \theta \quad : \text{الوضع الأعلى}$$

$$\frac{h_2}{x} = \frac{r_2 - r}{y}$$

$$F_c * y = \frac{F_s + Mg}{2} * x \quad \text{الوضع المتوسط :}$$

$$K = \frac{F_{s1}}{s_1}, \quad k = \frac{F_{s2}}{s_2}, \quad K = \frac{F_{s2} - F_{s1}}{s_2 - s_1}$$

$$r_1 = R - \frac{\Delta r}{2}, \quad r_2 = R + \frac{\Delta r}{2}, \quad \Delta r = \frac{x}{y} h$$

$$K = 2 \left(\frac{x}{y} \right)^2 \left(\frac{F_{c2} - F_{c1}}{r_2 - r_1} \right), \quad F_{c1} = m\omega_1^2 r_1, \quad F_{c2} = m\omega_2^2 r_2$$

$$K_{total} = 2 \left(\frac{x}{y} \right)^2 \left(\frac{F_{c4} - F_{c3}}{r_2 - r_1} \right), \quad K_{\text{جديد}} = K_{total} - K_{\text{الأول}} \quad \text{عند إضافة نابض جديد}$$

$$F_{c4} = m\omega^2 r_2, \quad F_{c3} = m\omega^2 r_1$$

: proell governot 1.4

$$h = \frac{BD}{BE} \left(\frac{m + M/2(1+q)}{m} \right) \frac{g}{\omega^2}$$

$$q = \frac{\tan \beta}{\tan \alpha}, \quad \tan \beta = \frac{BC}{BD}, \quad \tan \alpha = \frac{IB}{BD}$$

مع الاحتكاك:

$$\omega_{\max}^2 = \frac{BD}{BE} \left(\frac{m + (M + \frac{F}{g})/2(1+q)}{m} \right) \frac{g}{h}$$

$$\omega_{\min}^2 = \frac{BD}{BE} \left(\frac{m + (M - \frac{F}{g})/2(1+q)}{m} \right) \frac{g}{h}$$