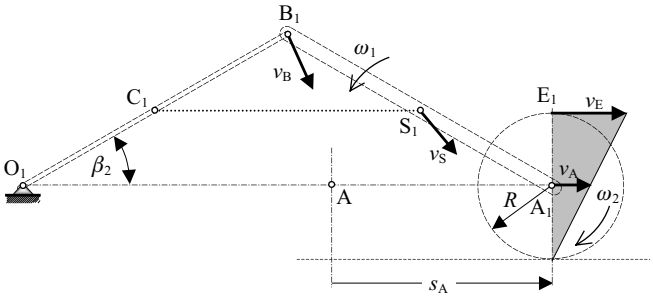
$s_D = s_E = 2s_A$, $\quad v_D = v_E = 2v_A$,

$\omega_3 = \dfrac{v_D}{r} = \dfrac{2v_A}{r}$,

$\Delta h_S = \dfrac{l}{2}\sin 60° - \dfrac{l}{2}\sin 30° = \dfrac{l}{4}\left(\sqrt{3}-1\right)$, $\quad v_S = v_A \cos 30° = \dfrac{v_A\sqrt{3}}{2}$,

$\omega_1 = \dfrac{v_{B/A}}{l} = \dfrac{v_A}{l}$.



Slika 5.4.16 *Uz primjer 5.12*

Deformacija opruge: $\overline{CS} = 2\left(\dfrac{l}{2}\cos 60°\right) = \dfrac{l}{2}$, $\overline{C_1S_1} = 2\left(\dfrac{l}{2}\cos 30°\right) = \dfrac{l\sqrt{3}}{2}$ pa je

$\delta = \overline{C_1S_1} - \overline{CS} = \dfrac{l}{2}\left(\sqrt{3}-1\right)$.

Zakon kinetičke energije:

$$\frac{v_S^2 m}{2} + \frac{\omega_1^2 \dfrac{ml^2}{12}}{2} + \frac{v_A^2 2m}{2} + \frac{\omega_2^2 \dfrac{2mR^2}{2}}{2} + \frac{\omega_3^2 \dfrac{mr^2}{2}}{2} + \frac{v_D^2 2m}{2} = mg\Delta h_S + 2mgs_D - \frac{c\delta^2}{2},$$

$$\frac{\frac{3}{4}v_A^2 m}{2} + \frac{\dfrac{v_A^2}{l^2}\dfrac{ml^2}{12}}{2} + \frac{v_A^2 2m}{2} + \frac{\dfrac{v_A^2}{R^2}\dfrac{2mR^2}{2}}{2} + \frac{\dfrac{4v_A^2}{r^2}\dfrac{mr^2}{2}}{2} + \frac{4v_A^2 2m}{2} =$$

$$= mg\frac{l}{4}\left(\sqrt{3}-1\right) + 2mg2\sqrt{3}l - \frac{c\dfrac{l^2}{4}\left(\sqrt{3}-1\right)^2}{2}.$$

Nakon uvrštavanja zadanih veličina slijedi:

$$v_A^2\left(\frac{3}{8}+\frac{1}{24}+1+\frac{1}{2}+1+4\right) = g\left(\frac{\sqrt{3}-1}{2}+8\sqrt{3}\right) - 5\left(\sqrt{3}-1\right), \quad v_A = 4{,}432 \text{ m/s}.$$