

VERIŽNA GONILA

- + NI ŽDRSA
- + MOŽNE VEČJE MEDOSNE RAŽDALJE
- + ŽAVŽAMEJO MALO PROSTORA
- + LAHKO Ž ENO VERIGO ŽENEHO VEČ GREDI
- + MANJŠE OBREHENTVE GREDI
- + NEOBČUTLJIVOST NA UPLIVE OKOLJA (TEMPERATURA, OMAŽANJA)
- POLIGONSKI EFEKT
- HRUP
- DRAGA IŽVEDBA IN UŽDRŽEVANJE

DELITEU VERIG GLEDE NA UPORABO

- POGONŠE VERIGE $v_{dop} = 35 \text{ m/s}$
- BREHENSŠE VERIGE $v_{dop} = 2 \text{ m/s}$
- TRANSPORTNE VERIGE $v_{dop} = 2 \text{ m/s}$

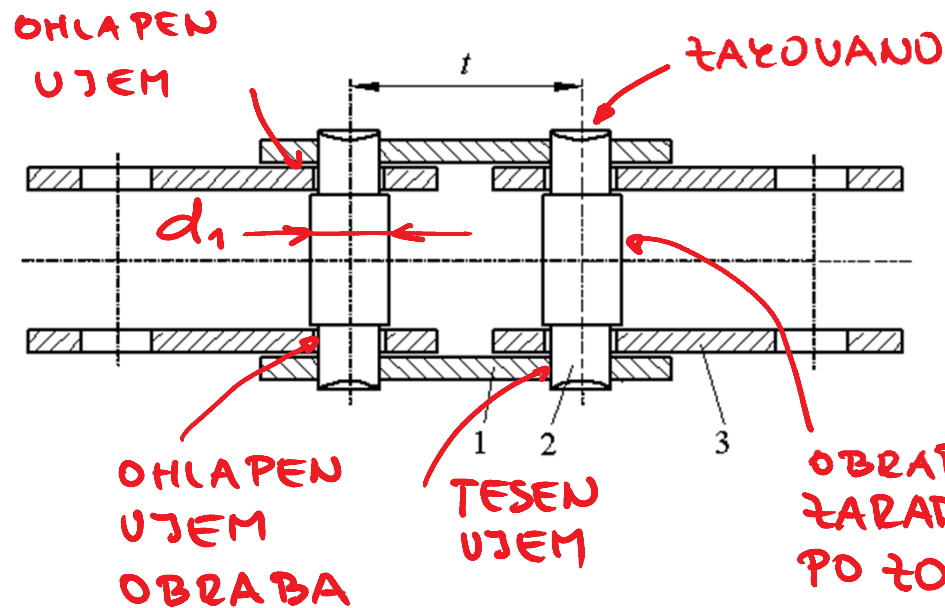
DELITEU VERIG GLEDE NA IZVEDBO

- VERIGE S ZOTALZO
- VERIGE S PUŠO
- VERIGE S SORNIZOM
- ŽOBATE VERIGE

DELITEU VERIG GLEDE NA RED

- ENOREDNE
- DUOREDNE
- ...

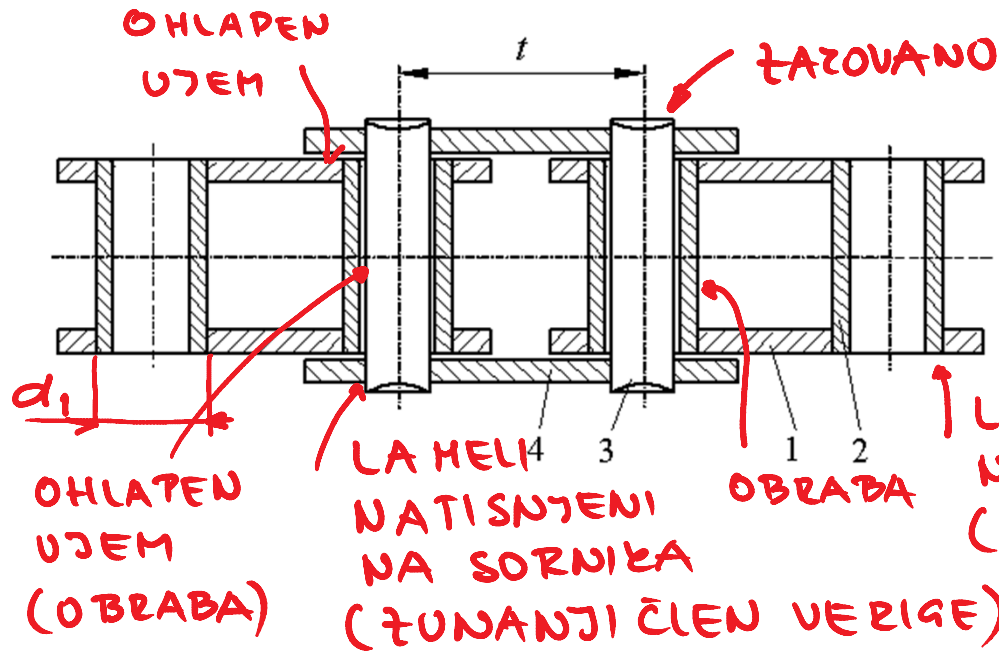
VERIGA S SORNIZOM



- 1 ZUNANJA LAMELA
- 2 SORNIK
- 3 NOTRANJA LAMELA

ZOT BREHENSKA
VERIGA

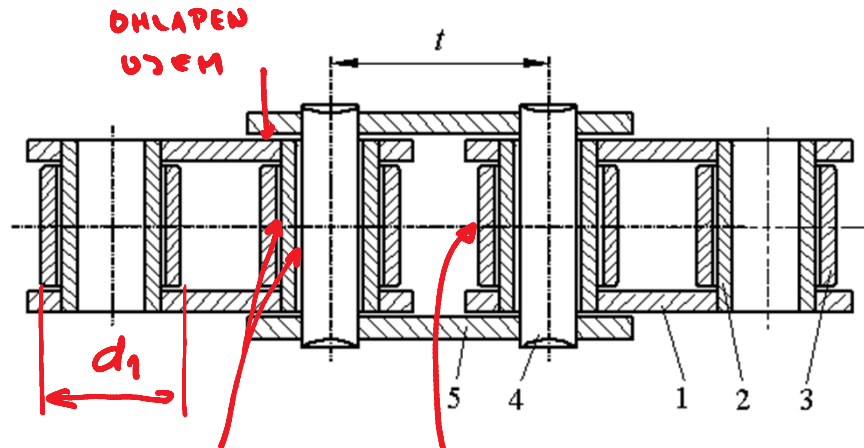
VERIGA S PUŠO



- 1 NOTRANJA LAMELA
- 2 PUŠA
- 3 SORNICE
- 4 ZUNANJA LAMELA

ZOT TOGONSKA
 VERIGA
 ZOT BREHENSKA
 VERIGA

VERIGA S ZOTALKO



- 1 NOTRANJA LAMELA
- 2 PUŠA
- 3 ZOTALKA
- 4 SORNİK
- 5 ŽUNANJA LAMELA

OBRABA

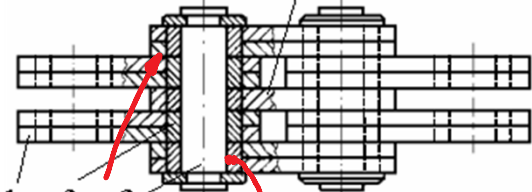
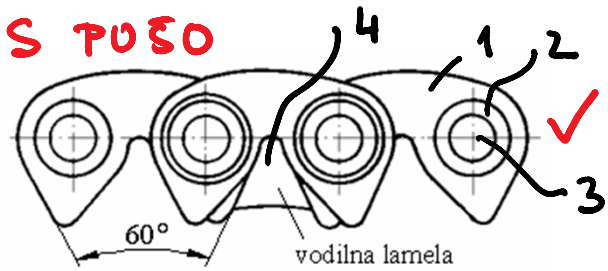
NA ZOTALJEVANJE ZOTALKE
PO TOBU VERIŽNEGA TOBNIKA
ŽHANJŠANA OBRABA

ZOT POGONSKA
VERIGA

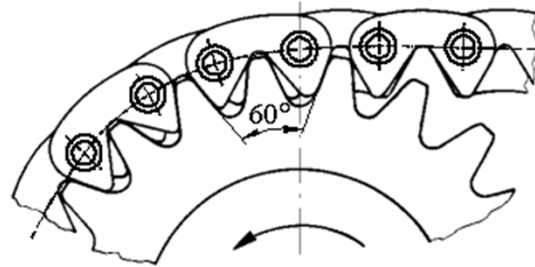
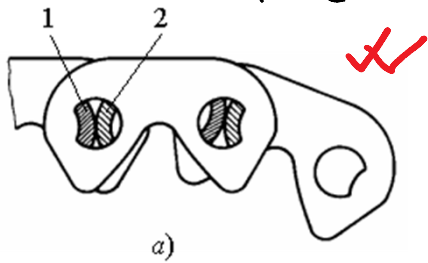
- 1,5 ŽELO ŽA POBOLJŠANJE
- 4,2 ŽELO ŽA CEMENTIRANJE
- 3 ALI POBOLJŠANJE

ŽOBATA VERIGA

S PUŠO



žRACNOST
žRACNOST
ŽGIBNI ČLEN



NIŠTA HRUPNOST

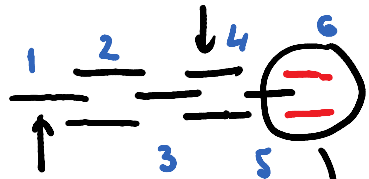
- 1 LAMELA
- 2 PUŠA
- 3 SORNICE
- 4 VODILNA LAMELA

Ž ŽGIBNIM
ČLENOM

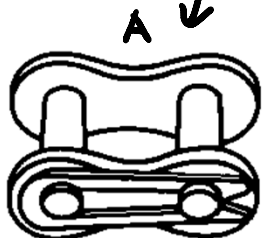
ŽOT POGONSKE
VERIGE

BOLJE ŽER IMAMO NA MESTO DRSENJA
KOTALIŠNJE

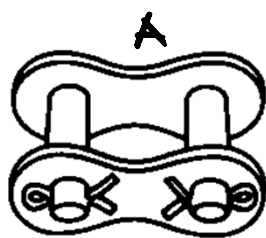
ZUNANJI ČLEN



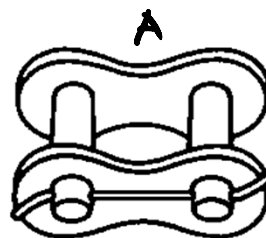
NOTRANJI ČLEN



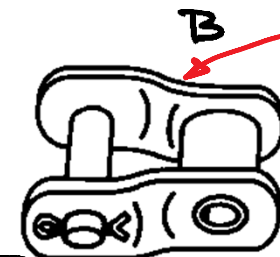
a) z zaskočko



b) z razcepko



c) z jekleno žico



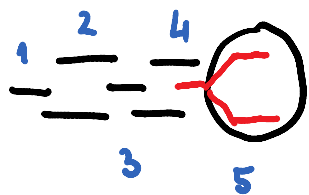
d) z upognjenima lamelama

ŠTEVILO ČLENOU VERIGE

PREDNOST DAJEMO SODEMU ŠTEVILU ČLENOU VERIGE

A

KONCENTRACIJE NAPETOSTI ŽARADI KRIVLJENJA NAPETOSTNIH SILNIC

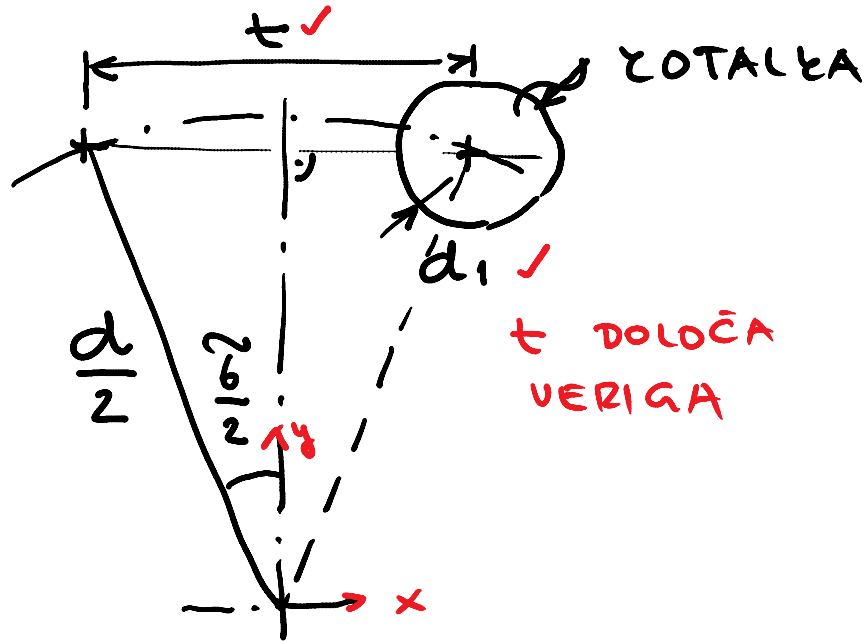


LIHO ŠTEVILO ČLENOU VERIGE

B

B IMA 20% NIŽJO NOSILNOST KOT A

VERIŽNI ŽOBNIČ ZA VERIGO S ZOTALKO, PUŠO IN SORNICEM



$$\delta = \frac{360^\circ}{z} \quad \checkmark \quad \text{I+BEREMO}$$

z : ŠTEVILO ŽOB
VERIŽNEGA
ŽOBNIČA

$$\sin \frac{\delta}{2} = \frac{t}{z d}$$

$$d = \frac{t}{\sin \delta/2} \quad \blacksquare$$

t : DELETEU ČLENOU VERIGE

d_1 : PREMER ZOTALKE, PUŠE ALI SORNICE (DOLOČA VERIGA)

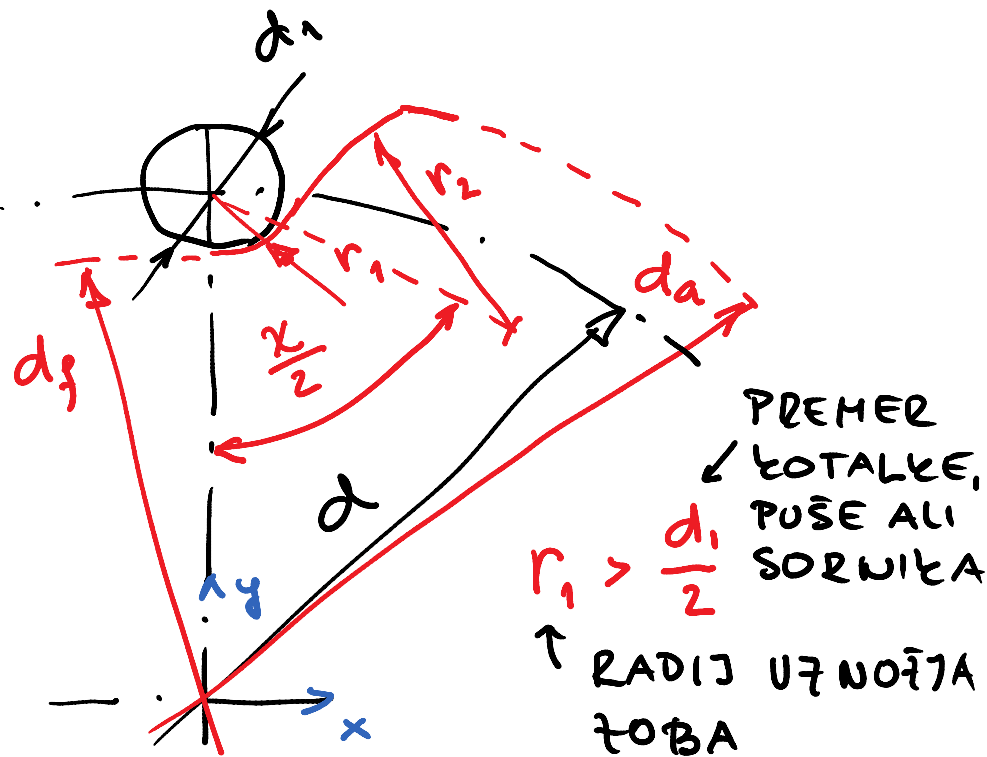
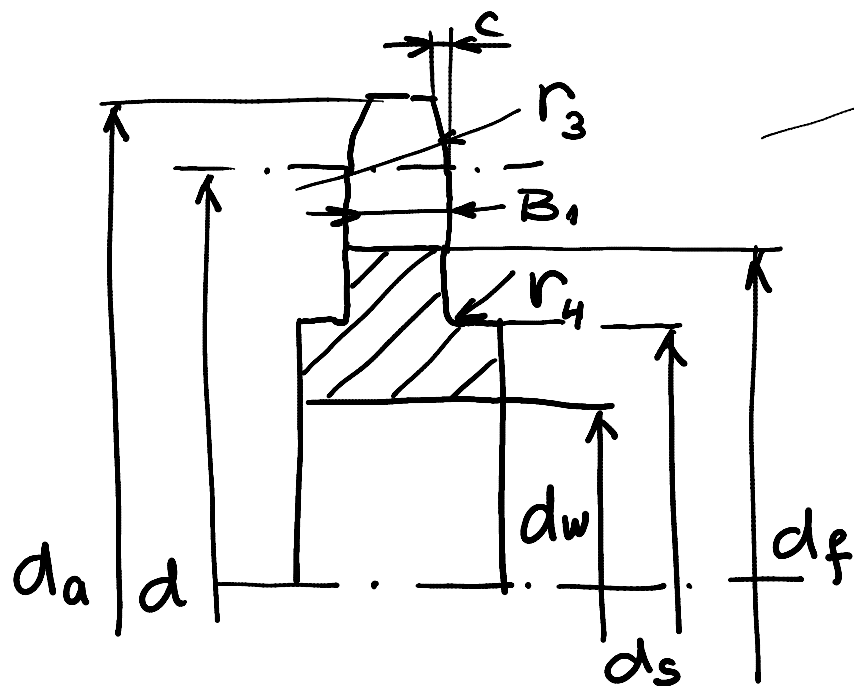
d : PREMER RAŽDELNEGA ŽROGA

δ : RAŽDELNI ŽOT

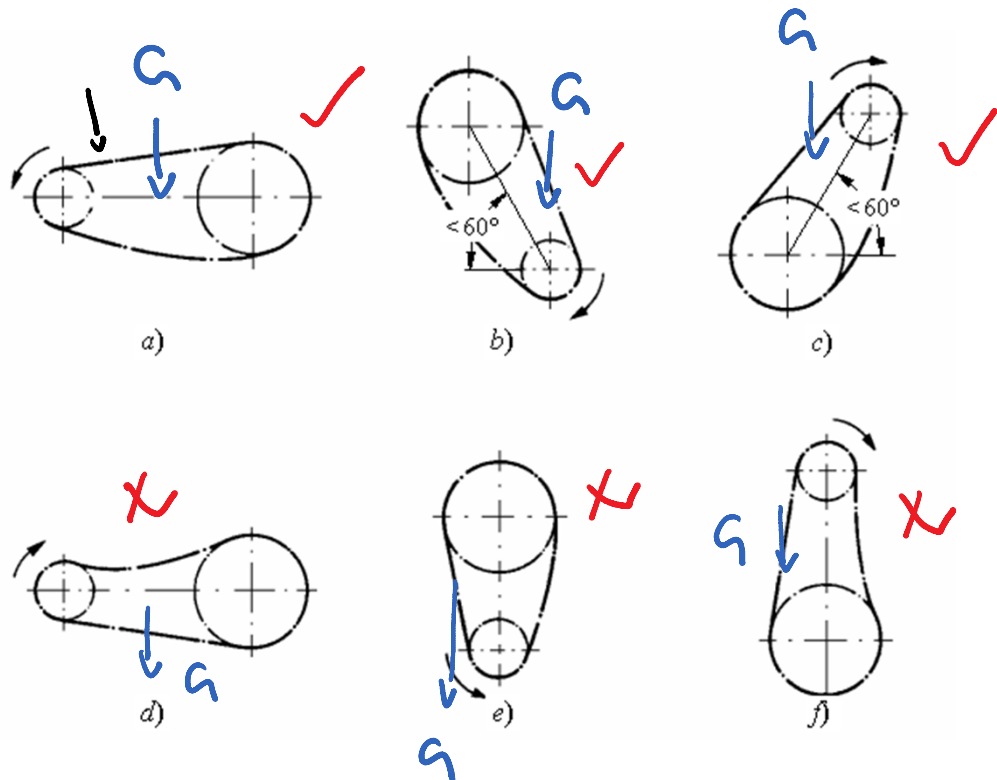
$d_f = d - d_1$ ΠΡΕΜΕΡ ΥΠΟΘΗΝΕΓΑ ΣΡΟΓΑ

d_a : ΠΡΕΜΕΡ ΤΕΜΗΣΥΕΓΑ ΣΡΟΓΑ

ΒΟΞ ΤΟΒΑ ΥΕΡΙΞΝΕΓΑ ΤΟΒΝΙΚΑ ΤΕ ΣΕΣΤΑΥΛΤΕΝ
 ΙΞ ΔΥΕΗ ΣΡΟΞΝΗΗ ΛΟΞΟΥ.



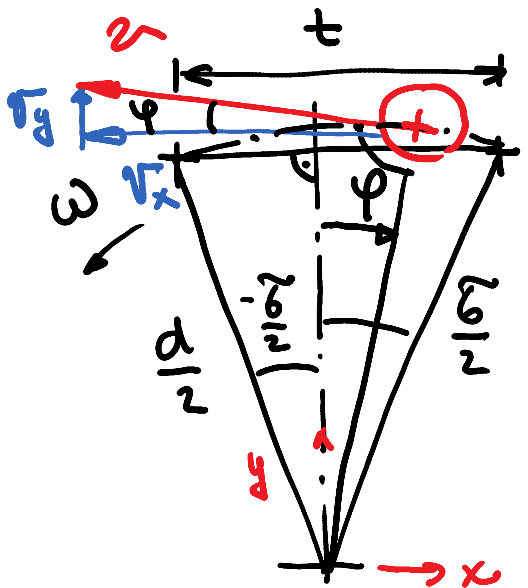
ΚΟΝΣΤΡΟΥΚΤΙΣΣΕ ΙΣΥΕΔΒΕ ΥΕΡΙΨΗΗ ΓΟΝΗ



ΣΥΙΣΕ ΥΕΛΙΑΖΟ
 ΞΑ ΓΟΝΗΛΑ
 ΒΡΕ Ί
 ΝΑΡΕΝΙΑΛΣΕΥ

ΝΑΡΕΝΙΑΛΝΗ ΥΕΡΙΨΗΗ ΊΟΒΝΗΚ ΊΕ ΝΑ ΟΒΤΕΞΑΖΟΊ
 ΥΕΊ ΥΕΡΙΓΕ.

POLIGONSKI EFEKT



NATEKANJE VERIGE

$$\omega = \text{const}$$

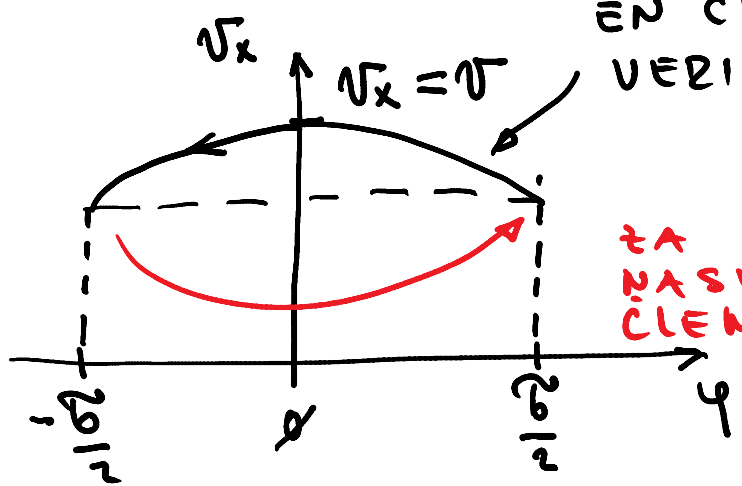
$$v = \omega \cdot \frac{d}{2}$$

$$v_x = v \cdot \cos \varphi = \frac{\omega d}{2} \cos \varphi$$

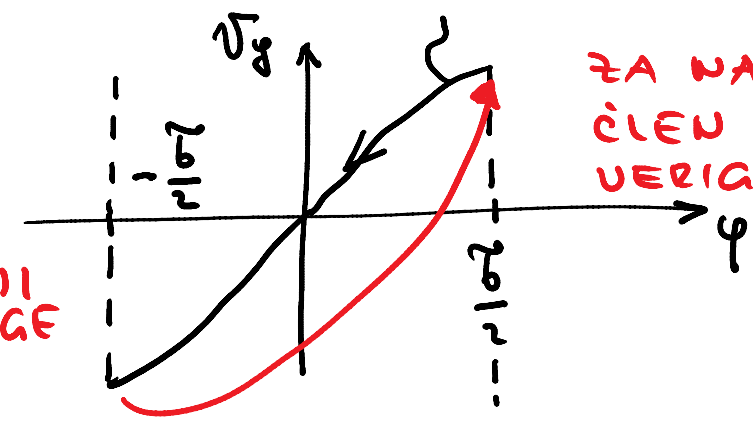
$$v_y = v \cdot \sin \varphi = \frac{\omega d}{2} \sin \varphi$$

ZA EN
ČLEN VERIGE

ZA
EN ČLEN
VERIGE



ZA
NASLEDNI
ČLEN VERIGE



ZA NASLEDNI
ČLEN
VERIGE

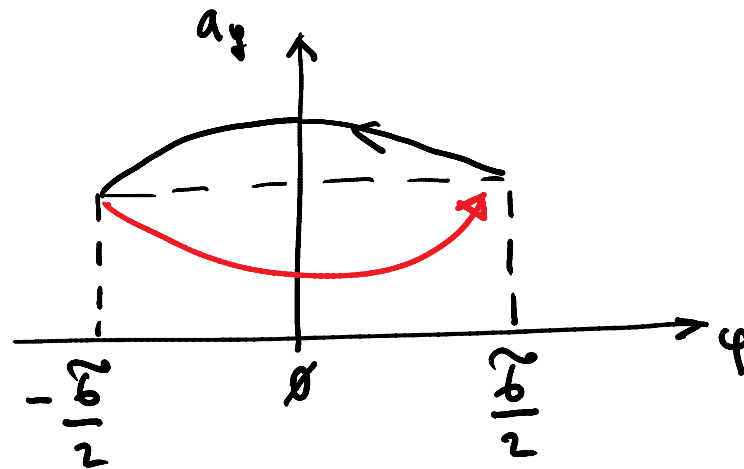
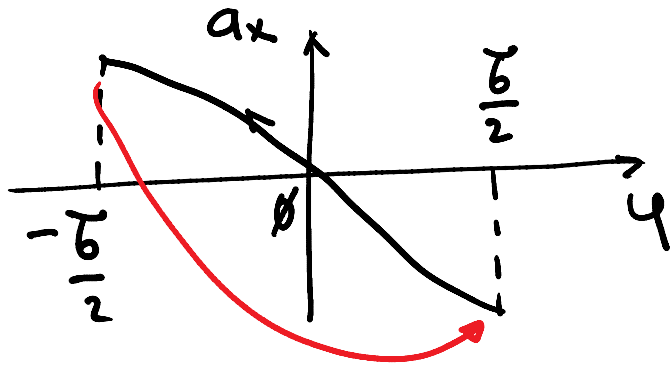
VSILJENO NIHANJE VERIGE!

NIHANJE HITROSTI v_x IMENUJEMO POLIGONSKI EFEKT

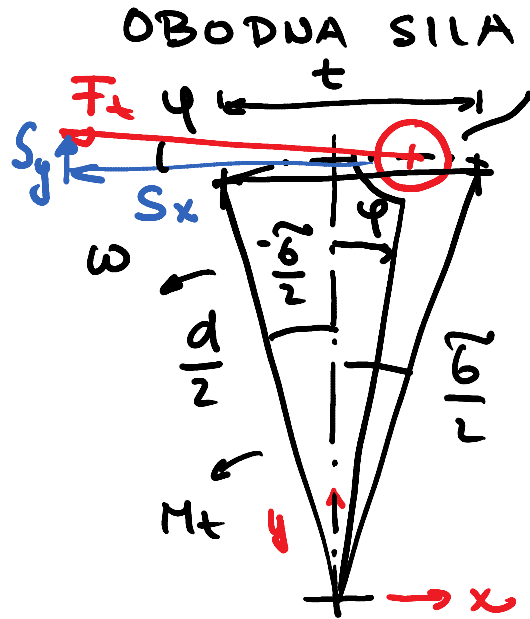
$$a_x = \frac{dv_x}{dt} = -\frac{\omega d}{2} \sin\varphi \frac{d\varphi}{dt} = -\frac{\omega^2 d}{2} \sin\varphi$$

$$a_y = \frac{dv_y}{dt} = \frac{\omega d}{2} \cos\varphi \frac{d\varphi}{dt} = \frac{\omega^2 d}{2} \cos\varphi$$

IZPELJANA VELJAJA
ZA $\omega = \text{const}$



SILE V VERIGI



ZOTALKA
NATEKANJE
VERIGE

$$M_t^v = F_t \cdot \frac{d}{2} = \text{const}$$

$$F_t = \frac{2M_t}{d}$$

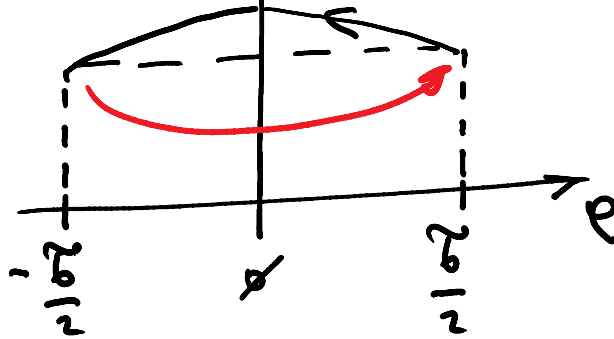
$$\omega = \text{const}$$

$$S_y = F_t \sin \varphi$$

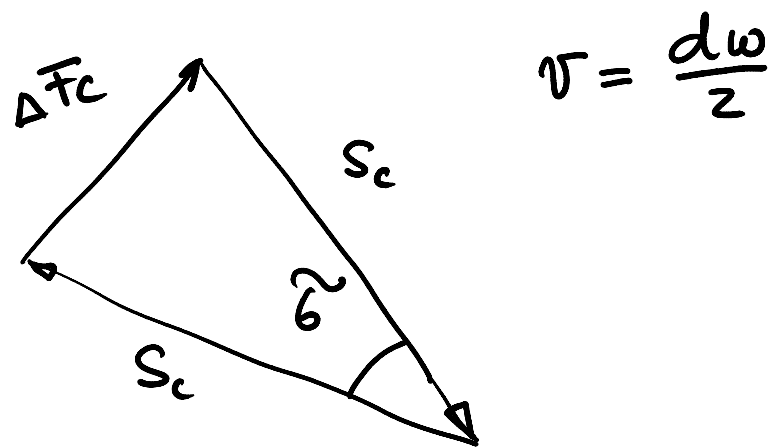
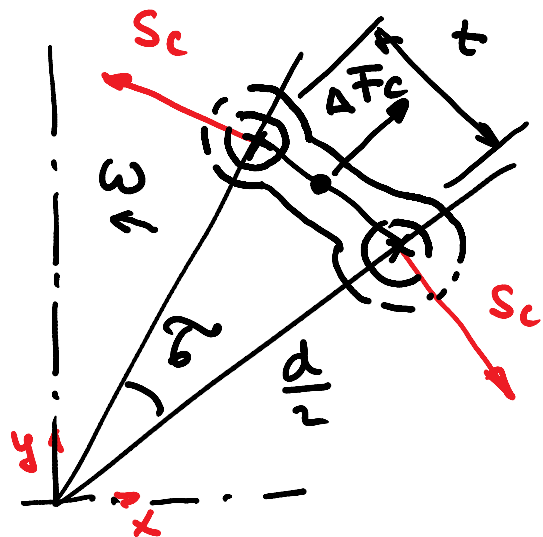
POUŽROČA UTBUJANO NI HANJE VERIGE

$$S_x = F_t \cdot \cos \varphi$$

$S_x \uparrow S_{x \max} = F_t = S_t$ OBODNA SILA V VERIGI



SILA V VERIGI ZARADI CENTRIFUGALNE SILE



$$\Delta F_c \approx S_c \cancel{\delta} = \Delta m \frac{d}{2} \omega^2 = \rho \left(\frac{d\omega}{2} \right)^2 \cancel{\delta}$$

Δm : MASA ČLENA VERIGE

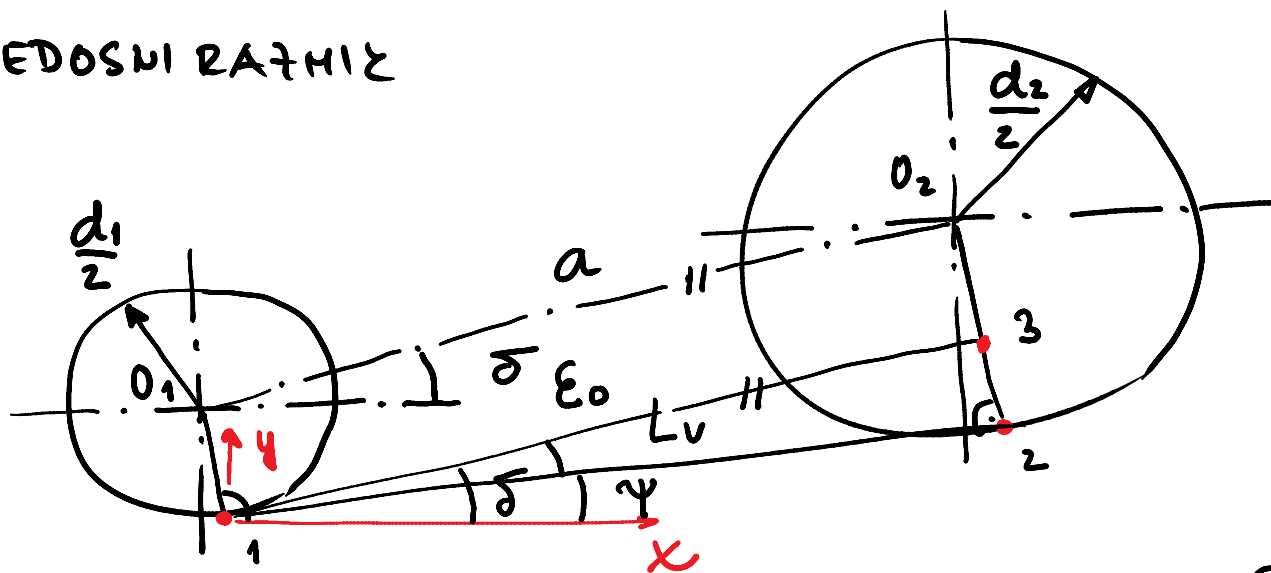
$$S_c = \rho v^2$$

$$\Delta m = \rho t \approx \rho \frac{d}{2} \delta$$

ρ : MASA VERIGE NA ENOTO DOLŽINE

SILA U VERIGI ZARADI LASTNE TEZE

α: MEDOSNI RAZNIK



$d_1 \checkmark$
 $d_2 \checkmark$
 $\overline{O_1 O_2} = a \checkmark$
 $\delta \checkmark$

NI ZA
 IZPIT

$$\psi = \delta - \epsilon_0$$

$$\sin \epsilon_0 = \frac{d_2 - d_1}{2a}$$

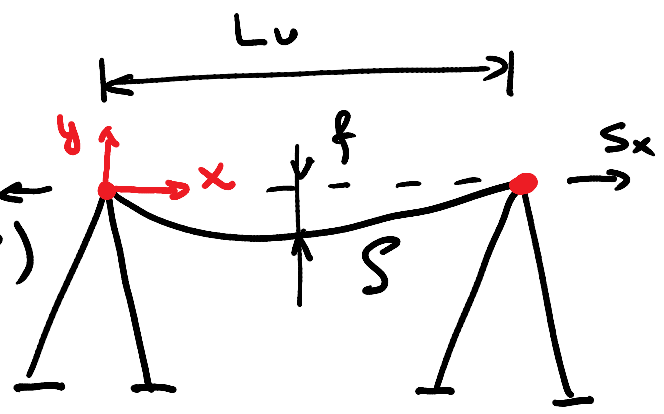
$$\overline{13} = a$$

$$\cos \epsilon_0 = \frac{L_u}{a}$$

$$L_u = a \cos \epsilon_0 \checkmark$$

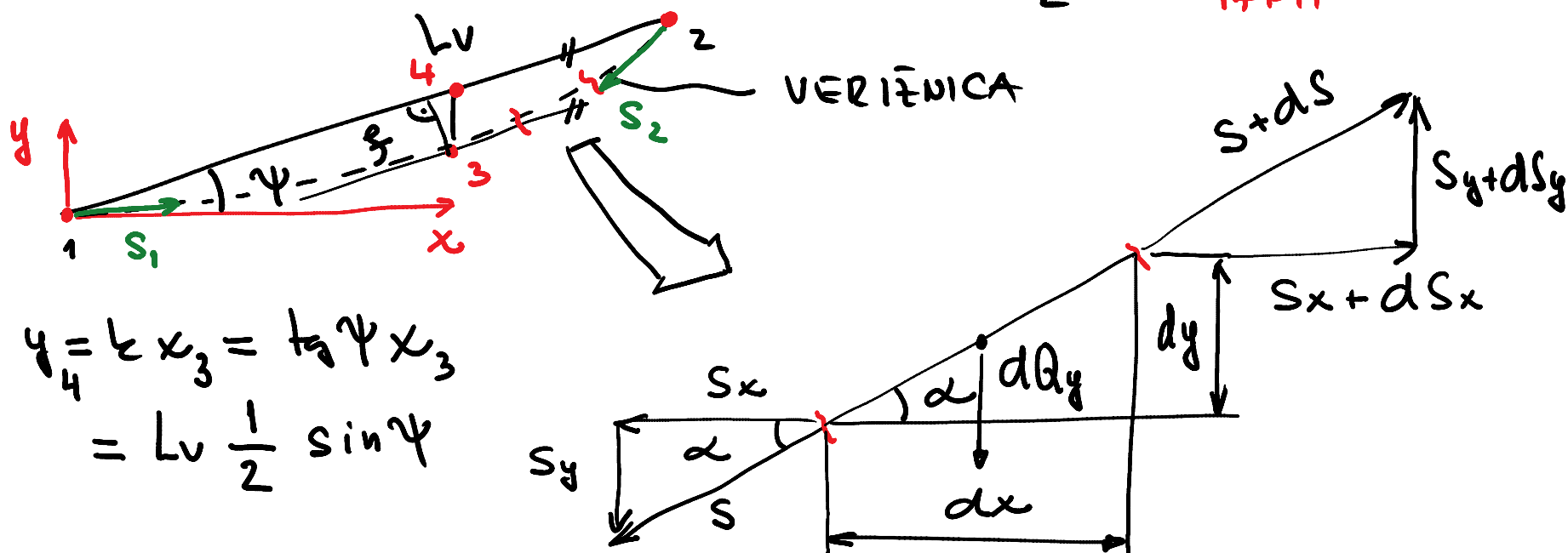
$$S_x = f(f, L_u, \delta)$$

?



$$\bar{y} = \frac{Lv}{2}$$

NI + A
I + PIT



$$y_4 = k x_3 = \tan \psi x_3$$

$$= Lv \frac{1}{2} \sin \psi$$

$$\sum F_{ix} = \phi = -\cancel{S_x} + \cancel{S_x} + dS_x \rightarrow dS_x = \phi$$

$$\sum F_{iy} = 0 = -\cancel{S_y} - dQ_y + \cancel{S_y} + dS_y \rightarrow dQ_y = dS_y$$

$$dQ_y = S' dx$$

S' : TĚĚA VERIGE NA ENOTO DOLŽINE

$$\tan \alpha = \frac{S_y}{S_x} = \frac{dy}{dx} \rightarrow S_y = S_x \frac{dy}{dx}$$

NI ZA
IAPIT

$$dQ_y = f' dx = dS_y = d\left(S_x \frac{dy}{dx}\right)$$

$$f' = \frac{d}{dx} \left(\underset{\substack{= \\ \text{const}}}{S_x} \frac{dy}{dx} \right) = S_x y''(x)$$

$$y''(x) = \frac{f'}{S_x} \quad \blacksquare$$

ENAČBA PARABOLIČNE
VERIFIKACIJE

$$y'(x) = \frac{f'}{S_x} x + C_1$$

R.P.

$$x = \phi \rightarrow y = \phi \rightarrow C_2 = \phi$$

$$y(x) = \frac{f'}{2 S_x} x^2 + C_1 x + C_2$$

$$x = L_v \cdot \cos \psi \rightarrow y = L_v \sin \psi$$

$$\cancel{L_v} \sin \psi = \frac{f'}{2 S_x} L_v \cancel{\cos}^2 \psi + C_1 \cancel{L_v} \cancel{\cos} \psi$$

$\tan \psi$

$$C_1 = \tan \psi - \frac{f'}{2 S_x} L_v \cos \psi$$

1. IŠČEMO TOČKO MAKSIMALNEGA POUČESA VERTIŽNICE 3

$$\cancel{\text{tg}} \psi = y'(x_3) = \frac{\cancel{g'}}{\cancel{S_x}} x_3 + \cancel{\text{tg}} \psi - \frac{\cancel{g'}}{\cancel{2S_x}} L_v \cos \psi$$

$$x_3 = \frac{L_v}{2} \cos \psi$$

$$y_3 = \frac{g'}{2S_x} \frac{L_v^2}{4} \cos^2 \psi + \cancel{\text{tg}} \psi \frac{L_v}{2} \cos \psi - \frac{g'}{2S_x} L_v \cos^2 \psi \frac{1}{2}$$

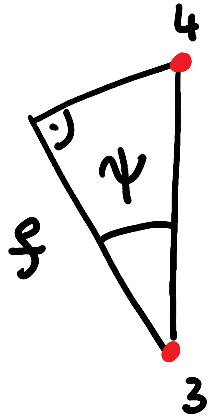
$$= -\frac{g'}{8S_x} L_v^2 \cos^2 \psi + \frac{L_v}{2} \sin \psi$$

NI ŽA IŽPIT

$$x_4 = x_3 = \frac{L_v}{2} \cos \psi$$

$$y_4 = \frac{L_v}{2} \sin \psi$$

$$\overline{34} = y_4 - y_3 = \frac{g' L_v^2}{8S_x} \cos^2 \psi$$



$$f = \frac{1}{3} \bar{L} \cos \psi = \frac{\rho' L_v^2}{8 S_x} \cos^3 \psi$$

$$S_x = \frac{\rho' L_v^2}{8 f} \cos^3 \psi$$

NI ZA
IŽPIT

SILA V VERIGI V TOČKAH 1 IN 2

$$S_1 = \sqrt{S_x(x=\phi)^2 + S_y(x=\phi)^2} = S_x(x_1) \sqrt{1 + y'^2(x_1)}$$

$$S_y(x=\phi) = S_x(x=\phi) y'(x=\phi)$$

$$S_2 = S_x(x_2) \sqrt{1 + y'^2(x_2)}$$

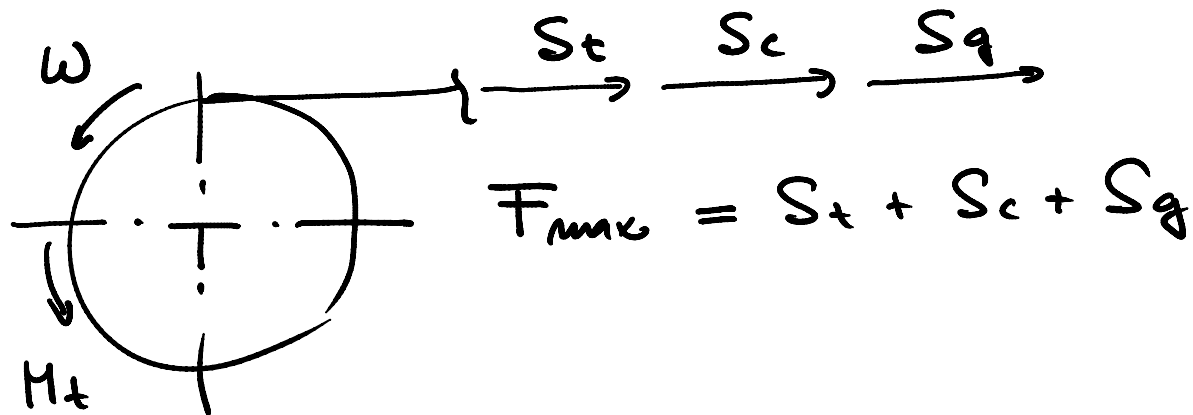
$$S_x = S_x(x_1) = S_x(x_2)$$

$$S_q \in \{S_1, S_2\}$$

SILA V VERIGI
ŽARADI LASTNE
TEŽE

UREJNOTENJE VERIŽNIK GONIL

- NA MAKSIMALNO SILO



- NA LASTNE FREKVENCE

S_y POUČROČA UZBUJENO NIHANJE VEJE VERIGE

- NA MOČ

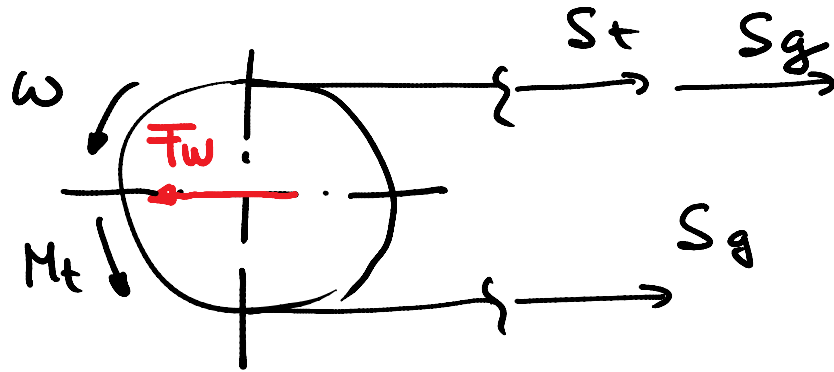
$$P_i = \frac{P f_1}{f_2 \cdot f_3 \cdots f_6}$$

P : MOČ, KI JO PREKO GONILA
PRENAŠAMO

f_1, \dots, f_6 PARAMETRI, KI UPOŠTEVAJO
POGOJE OKOLJA IN UPORABE

P_i : IMENSKA MOĆ VERIGE } IZBEREMO VERIGO
 ω_1

- NA OBRHEK NITEU GREDI



$$i = \frac{\omega_1}{\omega_2} = 1$$

$$F_w \cong S_t + 2S_g$$