

PRILOZI

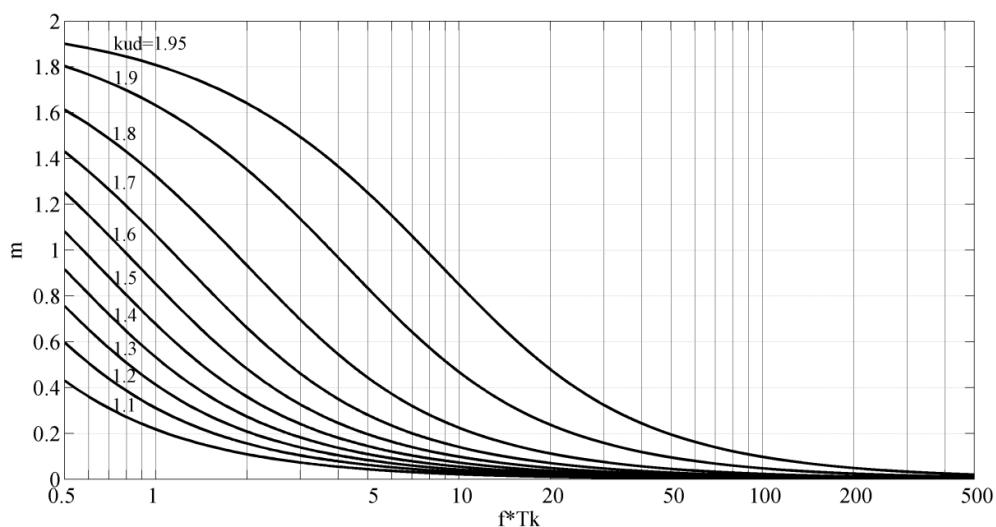
iz VN razvodnih postrojenja

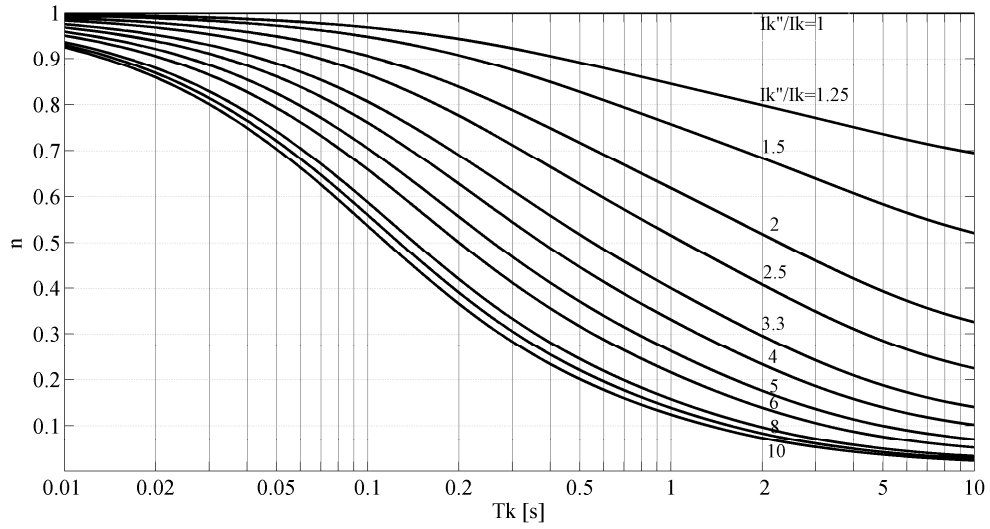
I. Karakteristike materijala koji se koriste u postrojenjima

Tabela I.1. Karakteristike materijala

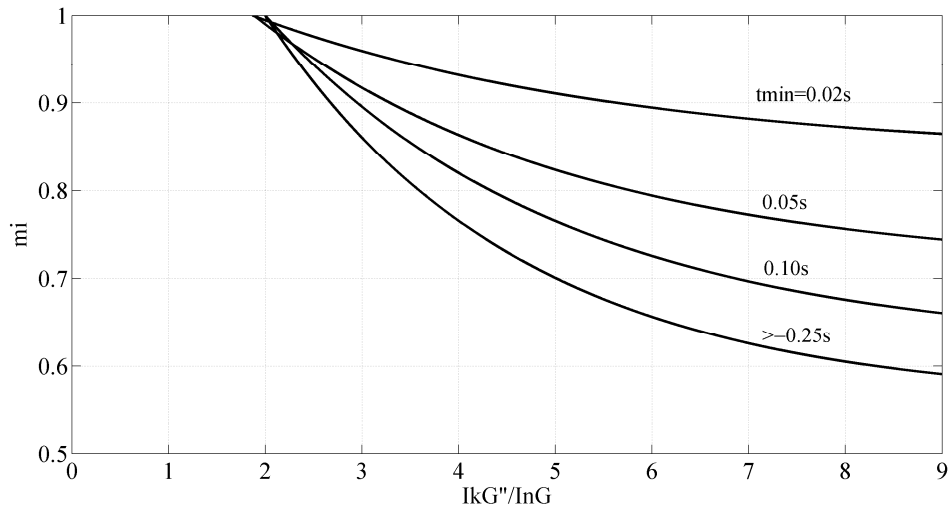
Parametar	Jedinica	Bakar	Aluminijum Al/Če užad Legure aluminijuma (aldrej)	Čelik
c	$J/kg \cdot ^\circ C$	390	910	480
ρ	kg/m^3	8900	2700	7850
κ_{20}	$1/(\Omega \cdot m)$	$56 \cdot 10^6$	$34.8 \cdot 10^6$	$7.25 \cdot 10^6$
α_{20}	$1/^\circ C$	0.0039	0.004	0.0045
E	N/m^2	$125 \cdot 10^9$	$\approx 62 \cdot 10^9$ – Al, Al legure $\approx 75 \cdot 10^9$ – Al/Če užad	-
$R_{P0.2}$	N/m^2	$120 \cdot 10^9$	$50 \cdot 10^9$ - $80 \cdot 10^9$	-
m_s	kg/m^3	$8.96 \cdot 10^3$	$2,7 \cdot 10^3$ kg/m^3	-

II. Proračun karakterističnih veličina struja kratkih spojeva

Slika II.1. Faktor „m“ u funkciji proizvoda $f \cdot T_k$ i udarnim koeficijentom k_{ud} kao parametrom

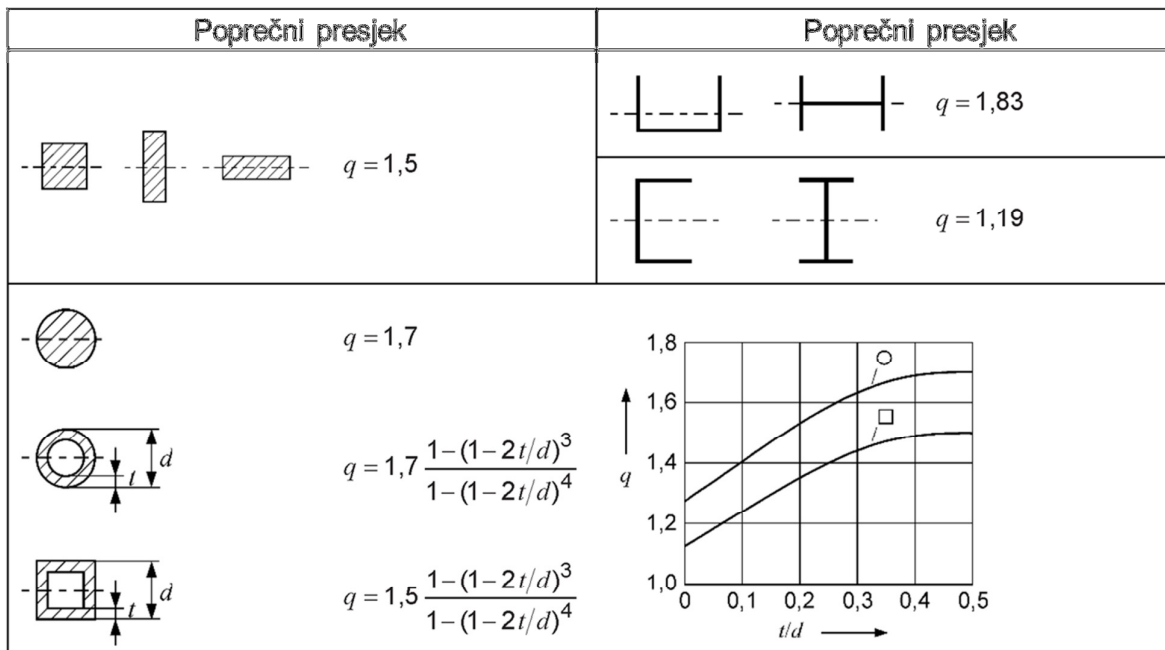


Slika II.2. Faktor „n“ u funkciji vremena T_k i odnosom I_k''/I_k kao parametrom

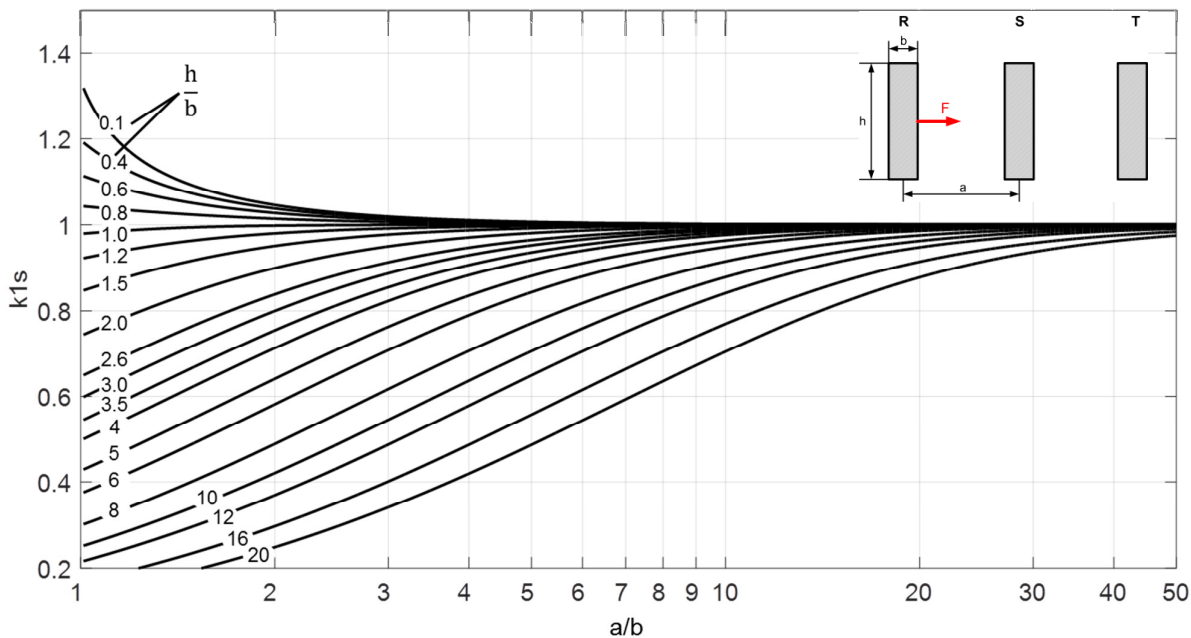


Slika II.3. Zavisnost faktora μ od vremena t_{min} i odnosa I_{kG}''/I_{nG}

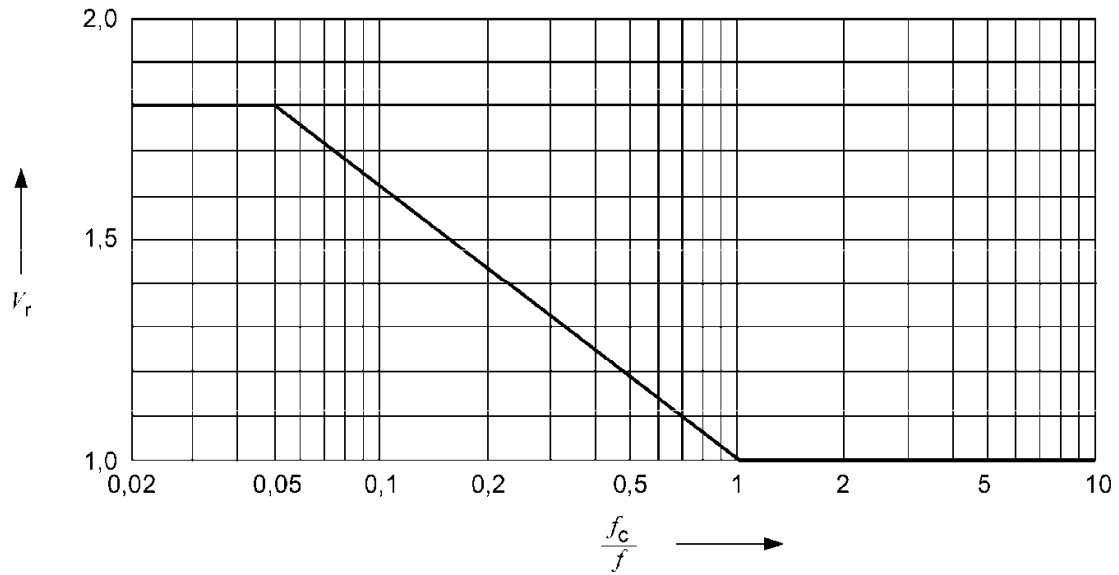
III. Proračun efekata struja kratkih spojeva



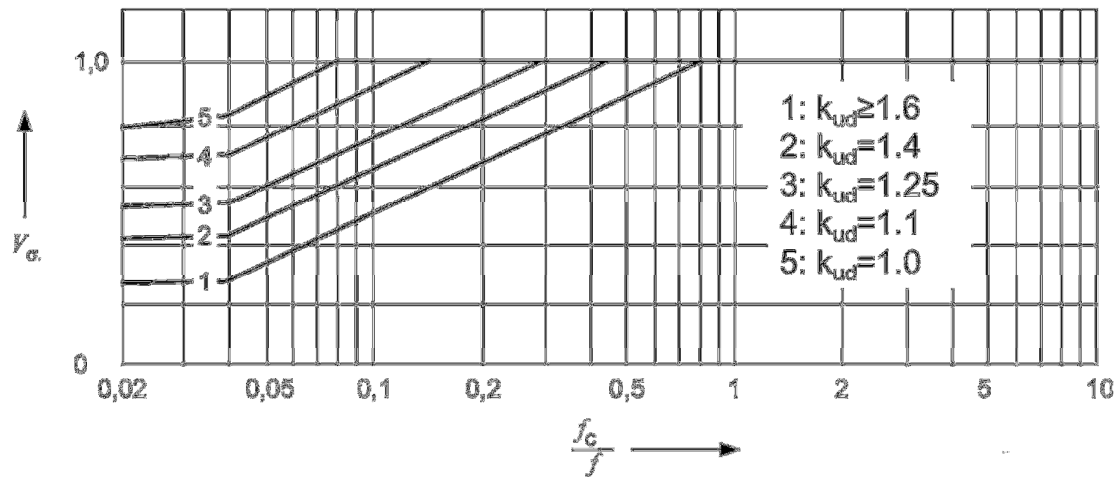
Slika III.1. Faktor plastičnosti provodnika zaviso od poprečnog presjeka



Slika III.2. Faktor k_{1s} za određivanje efektivnog razmaka između provodnika pravougaonog poprečnog presjeka u funkciji odnosa a/b



Slika III.3. Faktor V_r - odnos naprezanja provodnika na savijanje sa i bez trofaznog automatskog uključenja.



Slika III.4. Faktor V_σ - odnos dinamičkog i statičkog naprezanja provodnika na savijanje

Tabela III.5. Faktori α , β i γ u funkciji broja raspona i načina učvršćenja provodnika

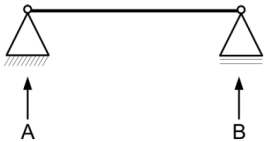
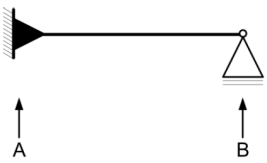
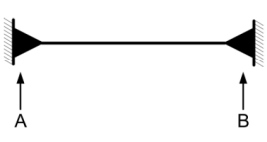
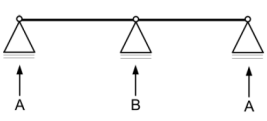
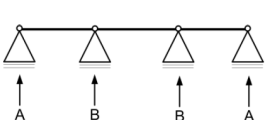
Broj raspona i način učvršćenja provodnika		Faktor α	Faktor β	Faktor γ	
Provodnik u jednom rasponu	A: pokretno učvršćenje B: pokretno učvršćenje		A: 0.5 B: 0.5	1.0	1.57
	A: pokretno učvršćenje B: fiksno učvršćenje		A: 0.625 B: 0.375	0.73	2.45
	A: fiksno učvršćenje B: fiksno učvršćenje		A: 0.5 B: 0.5	0.5	3.56
Kontinualni provodnik sa jednakim rastojanjima između pokretnih učvršćenja	Dva raspona		A: 0.375 B: 1.25	0.73	2.45
	Tri ili više raspona		A: 0.4 B: 1.1	0.73	3.56

Tabela III.6. Moment inercije J u funkciji dejstva sile, rasporeda i profila provodnika

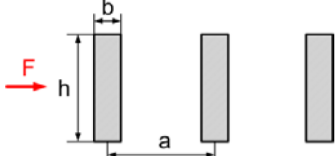
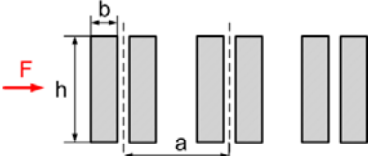
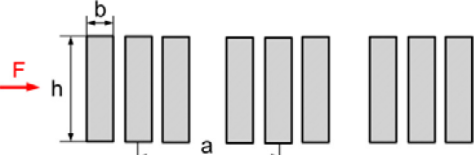
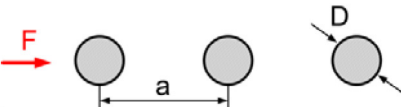

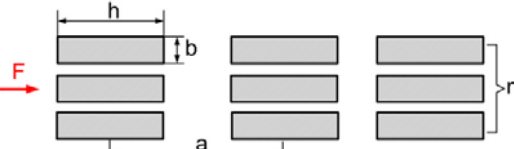
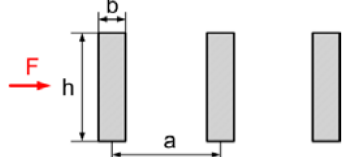
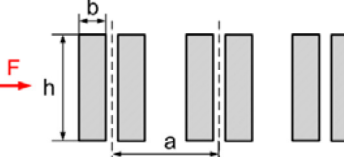
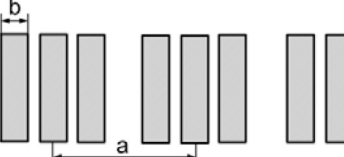
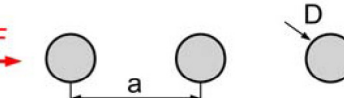


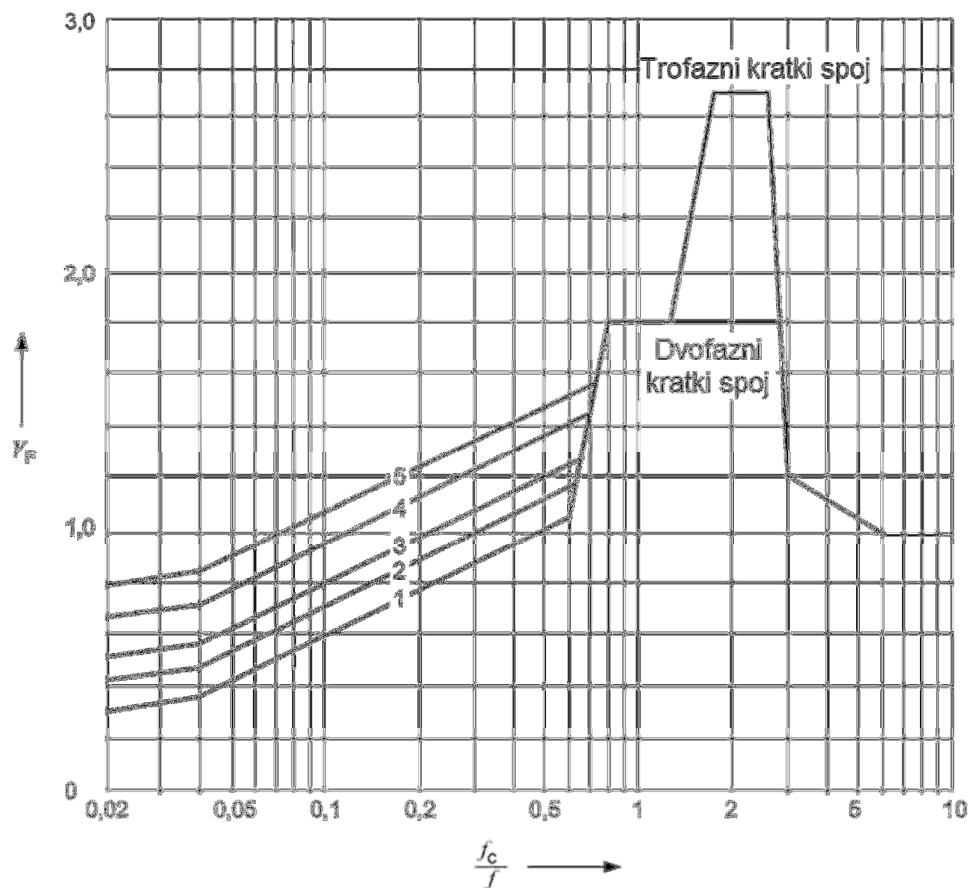
Skica dejstva sile, rasporeda i profila provodnika	Moment inercije J
	$J = \frac{b^3 \cdot h}{12}$
	$J = 2 \cdot 16 \cdot b^3 \cdot h$
	$J = 9.85 \cdot b^3 \cdot h$
	$J = \frac{\pi \cdot D^4}{64}$
	$J = \frac{\pi}{64} \cdot (D^4 - d^4)$
	$J = \frac{n \cdot b \cdot h^3}{12}$ <p style="text-align: center;">$n \leq 3$</p>

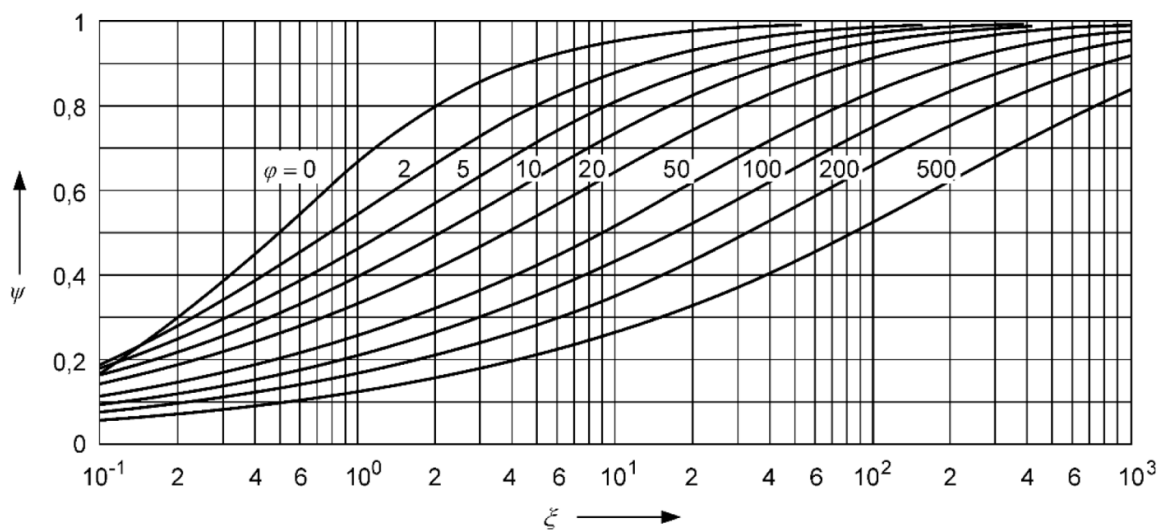
Tabela III.7. Otporni moment provodnika

Skica dejstva sile, rasporeda i profila provodnika	Otporni moment Z
	$Z = \frac{b^2 \cdot h}{6}$
	$Z = 1.44 \cdot b^2 \cdot h$
	$Z = 3.3 \cdot b^2 \cdot h$
	$Z = \frac{\pi \cdot D^3}{32}$
	$Z = \frac{\pi}{32} \cdot \frac{D^4 - d^4}{D}$
	$Z = \frac{n \cdot b \cdot h^2}{6}$ <p style="text-align: center;">$n \leq 3$</p>



Kriva 1: $k_{ud} \geq 1.6$, 2: $k_{ud} = 1.4$, 3: $k_{ud} = 1.25$, 4: $k_{ud} = 1.1$, 5: $k_{ud} = 1.0$

Slika III.8. Koeficijent V_F - odnos dinamičke i statičke sile na nosače



Slika III.9. Koeficijent ψ za proračun sile zatezanja F_t