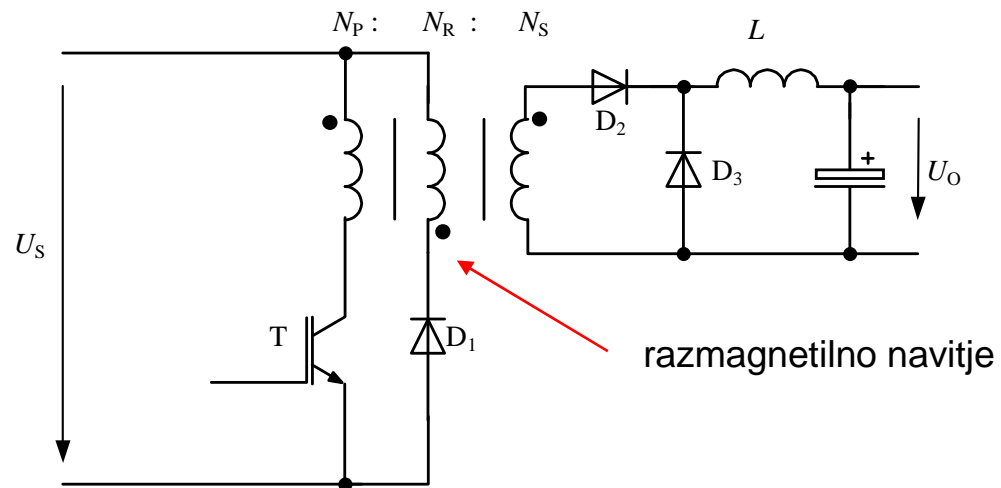


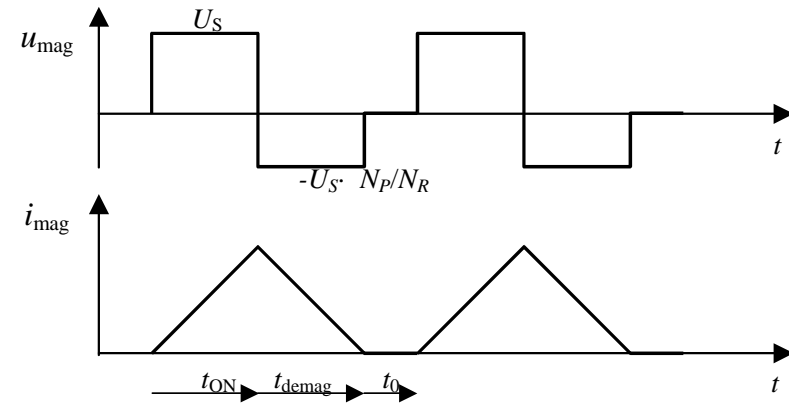
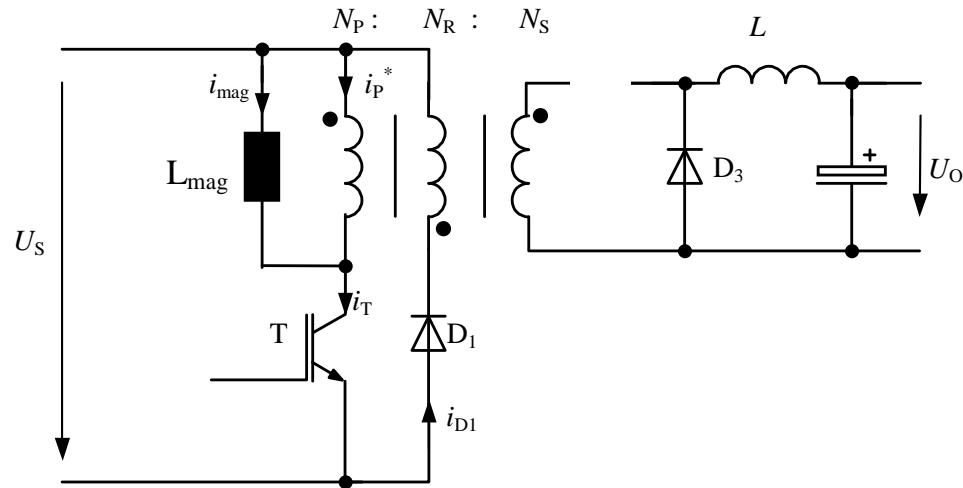
FORWARD pretvornik

- pretvorniško vezje z enosmernim pretokom energije
- po principu delovanja podoben Buck pretvorniku, a z galvansko ločitvijo



- pri analizi vezja velja:
 - da so vsi elementi idealni (brez izgub, elementi nimajo parazitnih komponent kot je npr. induktivnost pri R_B),
 - tranzistor in dioda prevajata tok le v eni smeri.

FORWARD pretvornik

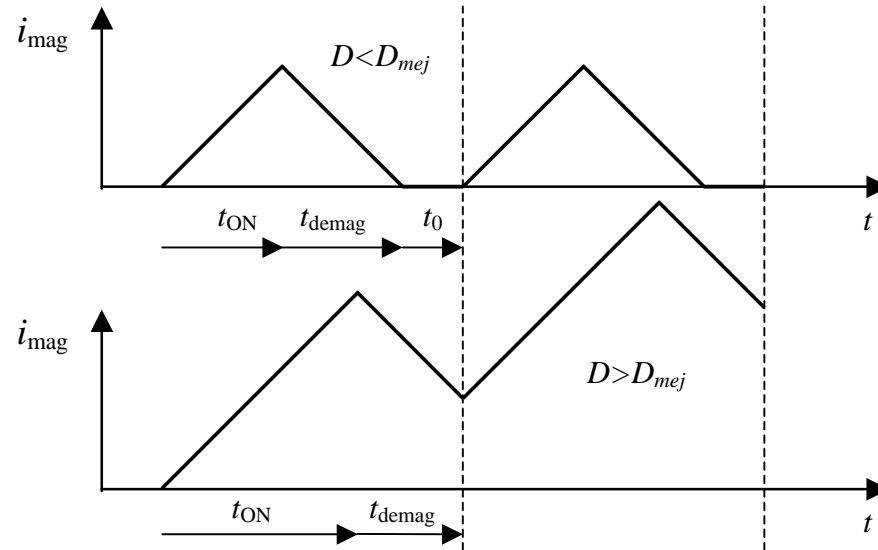


Sekundarno diodo odstranimo iz vezja \Rightarrow analiziramo zgolj magnetenje transformatorja (bremenski, sekundarni tok je enak nič). Analiziramo ob pogoju $N_P=N_R$

$$\text{ko prevaja tranzistor} \Rightarrow \frac{di_{mag}}{dt} = \frac{U_S}{L_{mag}} \quad u_{D1} = U_S \left(1 + \frac{N_R}{N_P} \right)$$

$$\text{ko tranzistor ne prevaja} \Rightarrow u_R = U_S \quad \frac{di_{mag}}{dt} = -\frac{N_P}{N_R} \cdot \frac{U_S}{L_{mag}}$$

FORWARD pretvornik



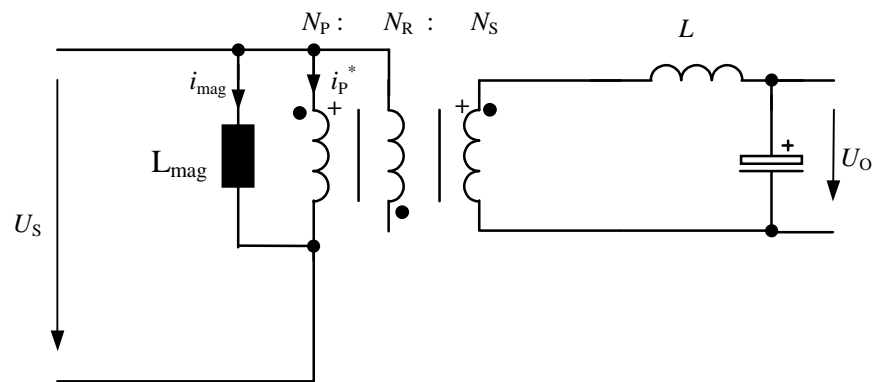
$$\frac{U_S}{L_{\text{mag}}} D_{\text{mej}} T_S = \frac{N_P}{N_R} \cdot \frac{U_S}{L_{\text{mag}}} (1 - D_{\text{mej}}) T_S$$

$$D_{\text{mej}} = \frac{N_P}{N_R} (1 - D_{\text{mej}})$$

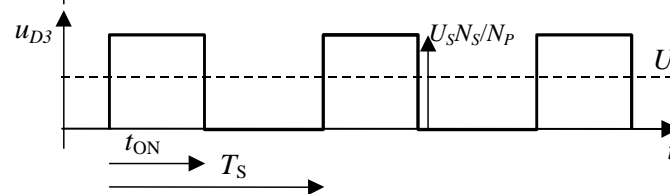
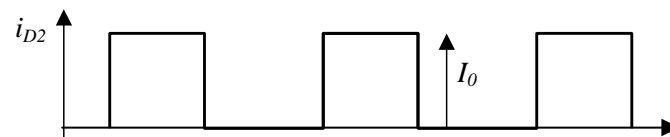
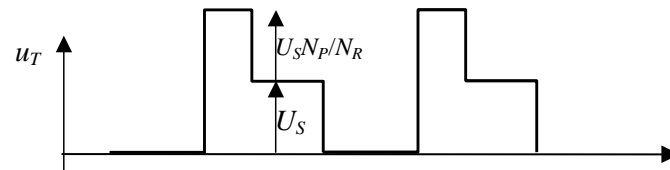
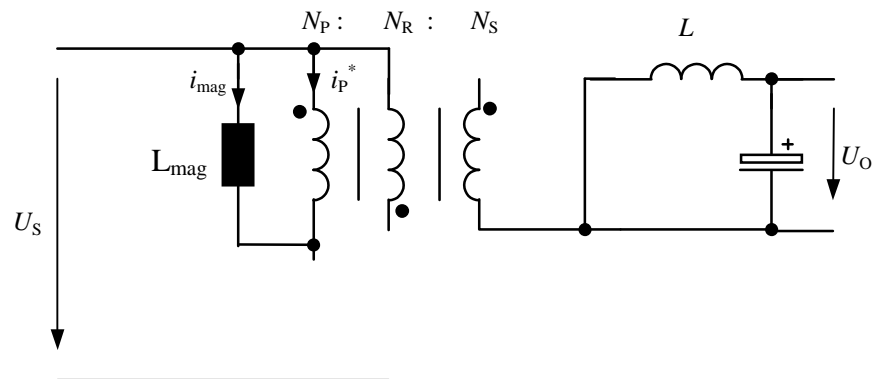
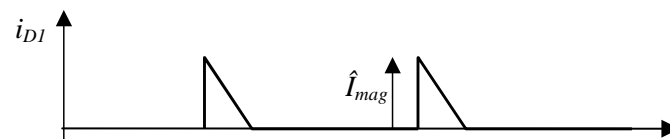
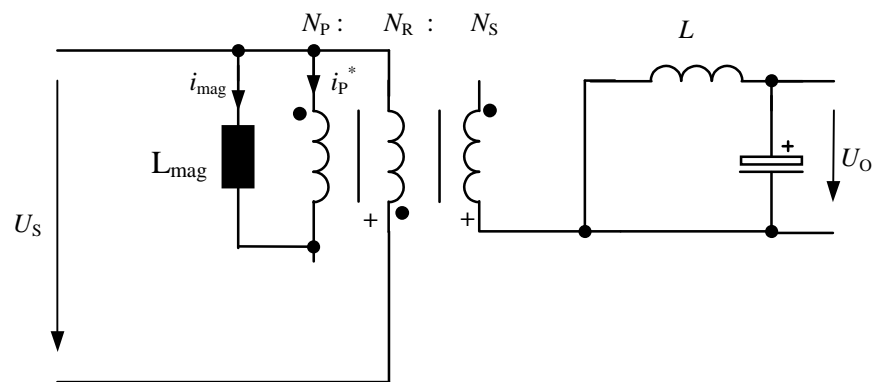
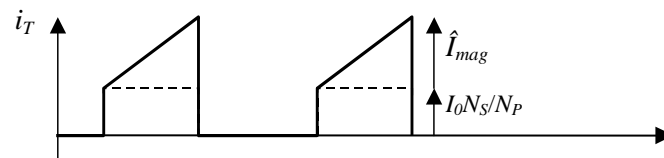
$$D_{\text{mej}} = \frac{1}{1 + \frac{N_R}{N_P}}$$

Problem nasičenja transformatorskega jedra vsled nepopolnega razmagnetenja \Rightarrow omejiti je treba vklopno razmerje!

FORWARD pretvornik



$$i_P = i_{mag} + i_P^* = i_{mag} + I_0 \frac{N_S}{N_P}$$



FORWARD pretvornik

Omejitev napetosti tranzistorja na $U_s \Rightarrow$ vklopno razmerje je omejeno na 0,5

