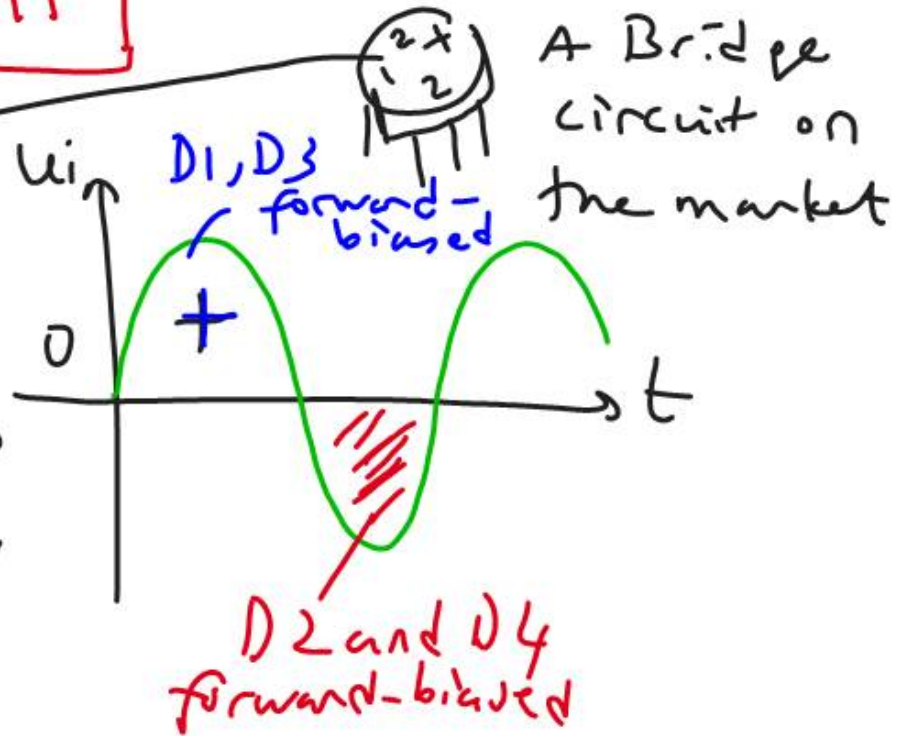
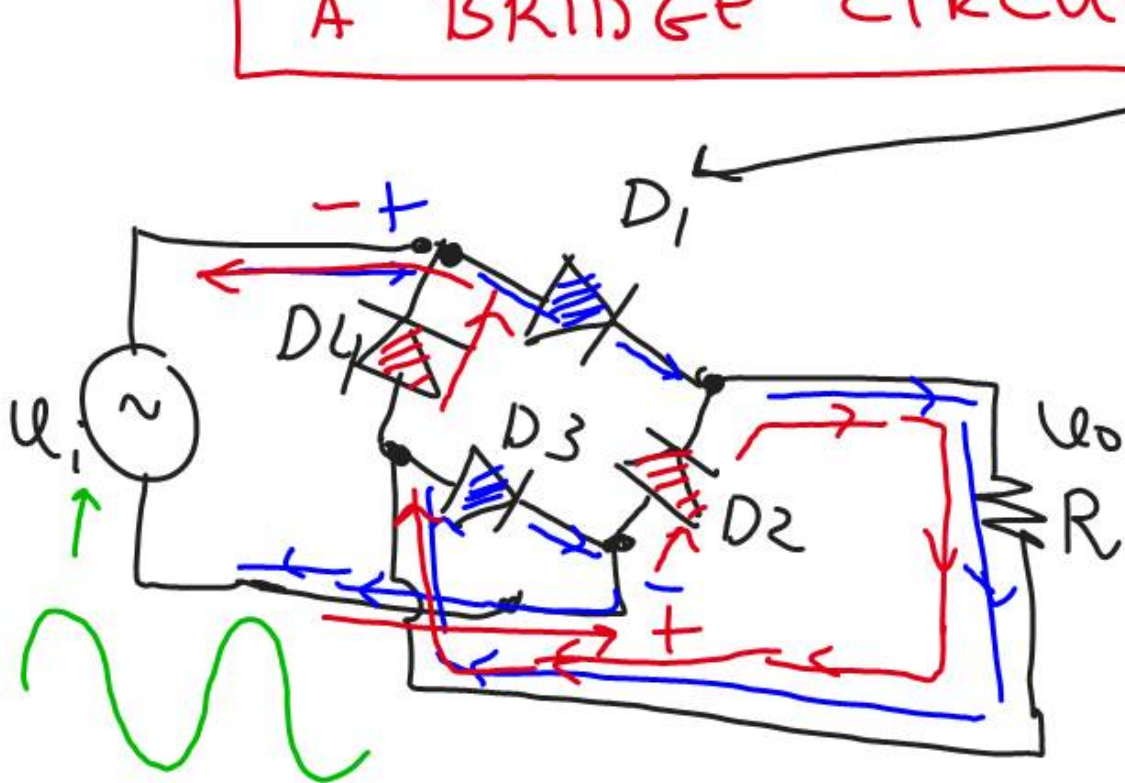


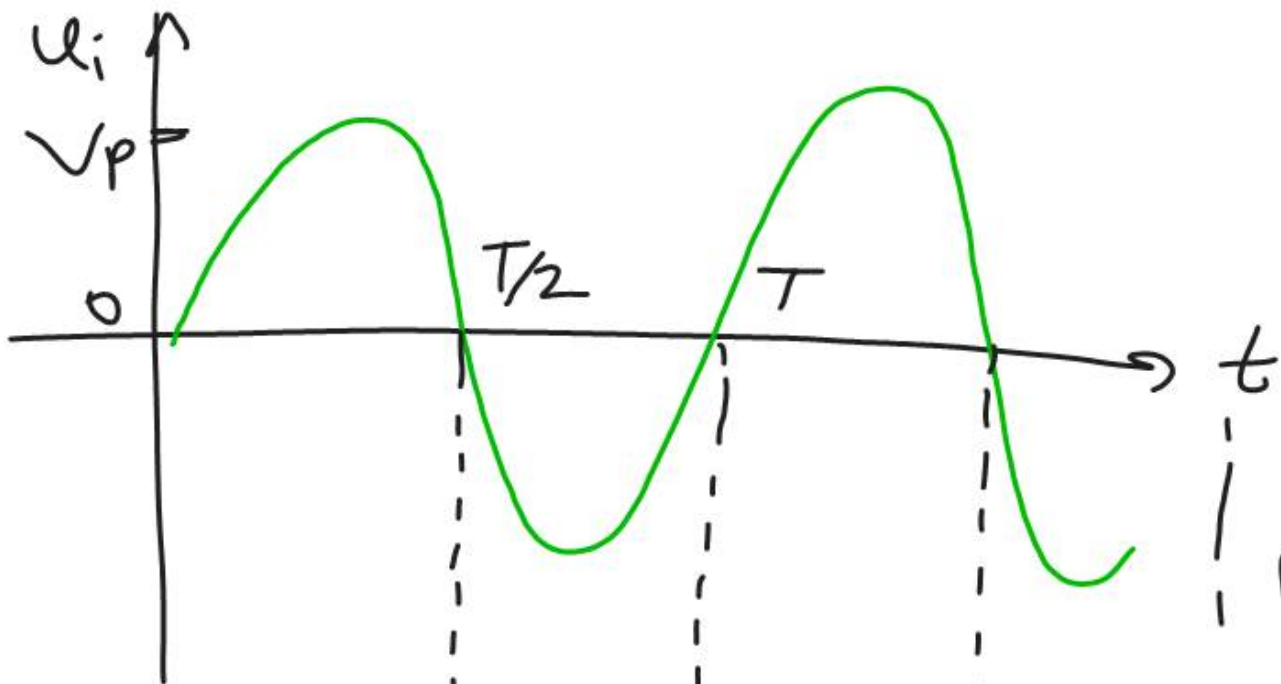
07.03.2011
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Full-wave Rectifier

- a) Bridge Circuit
- b) Center-tapped transformer circuit

A BRIDGE CIRCUIT



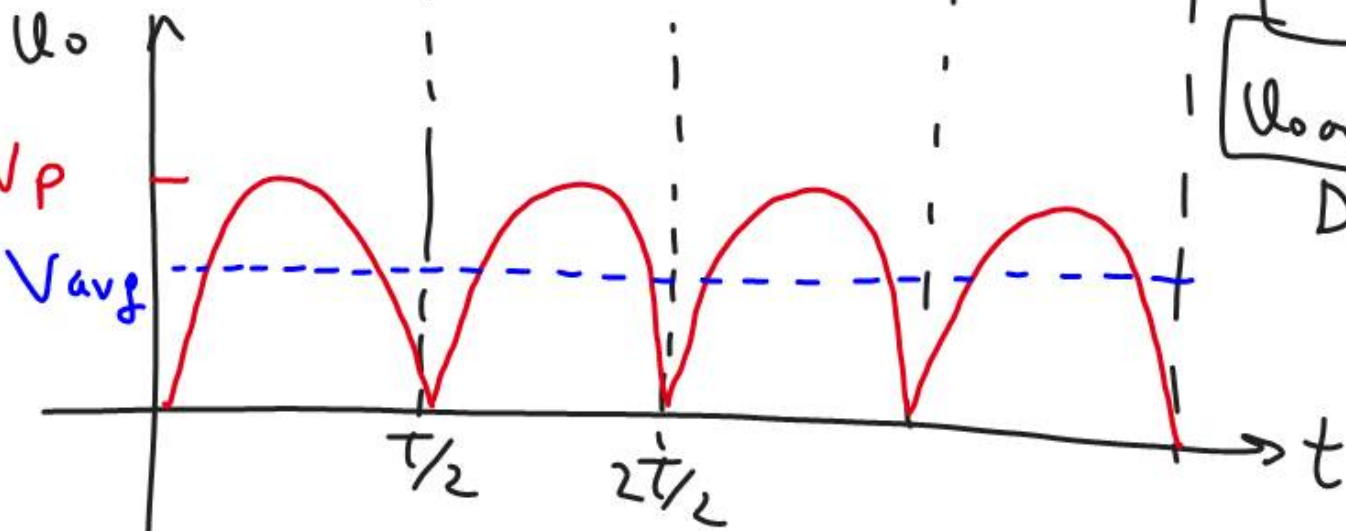


$$U_{o\text{avg}} = \frac{1}{T/2} \int_0^{T/2} V_p \sin \omega t dt$$

$$U_{o\text{avg}} \approx \frac{2V_p}{\pi}$$

$$U_{o\text{avg}} = 0.636 V_p$$

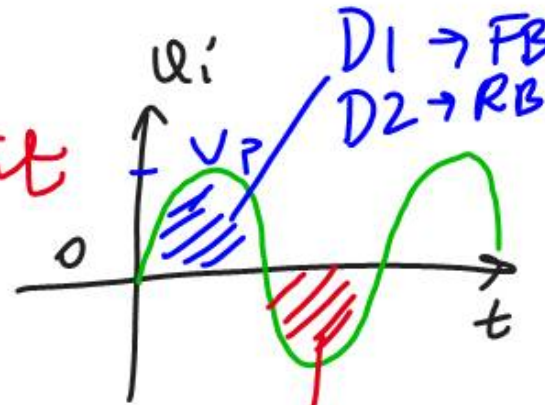
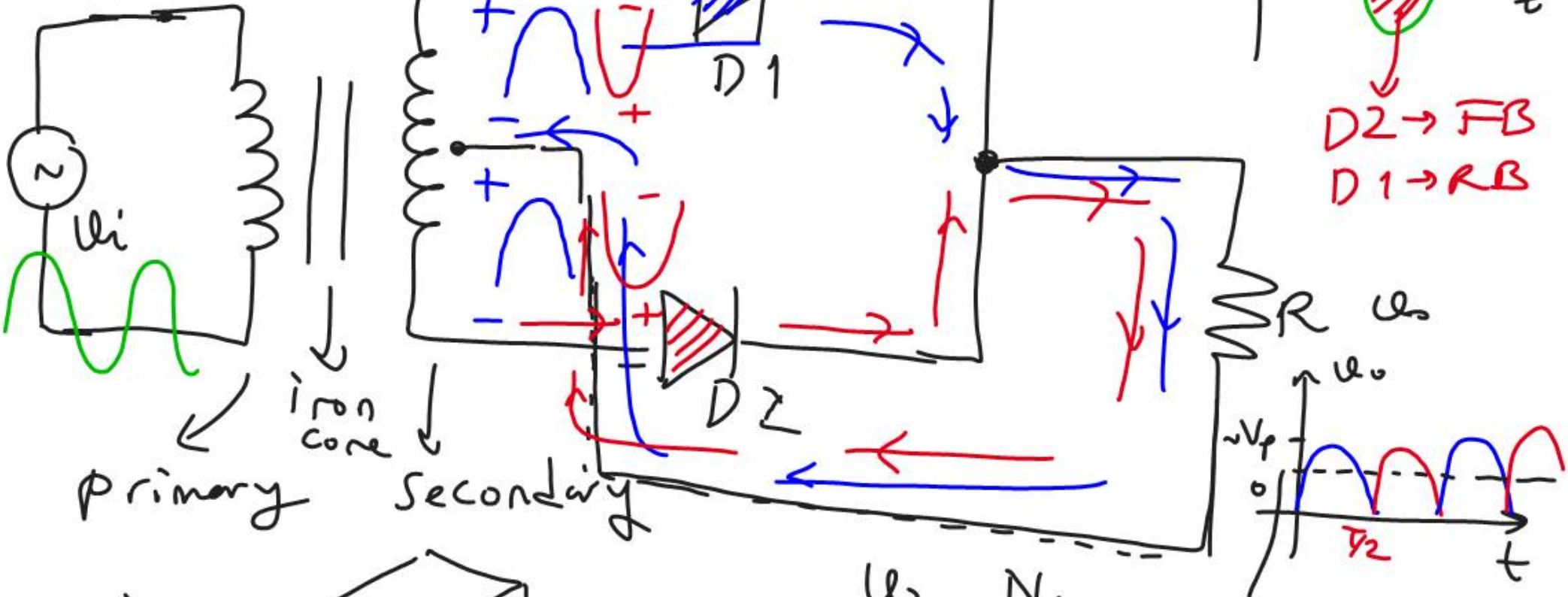
DC value



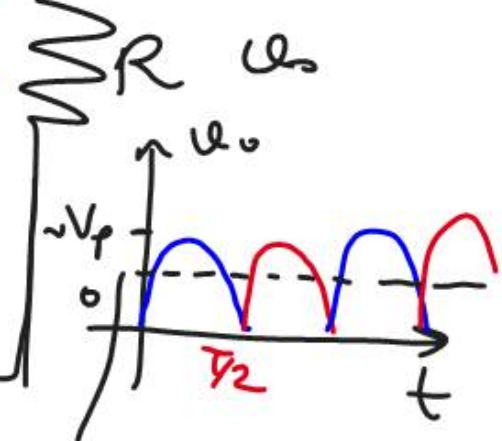
$\sim V_p$
 $(V_p = 1.4V)$

b) Center-tapped transformer circuit

$N_1 : N_2$ number of turns



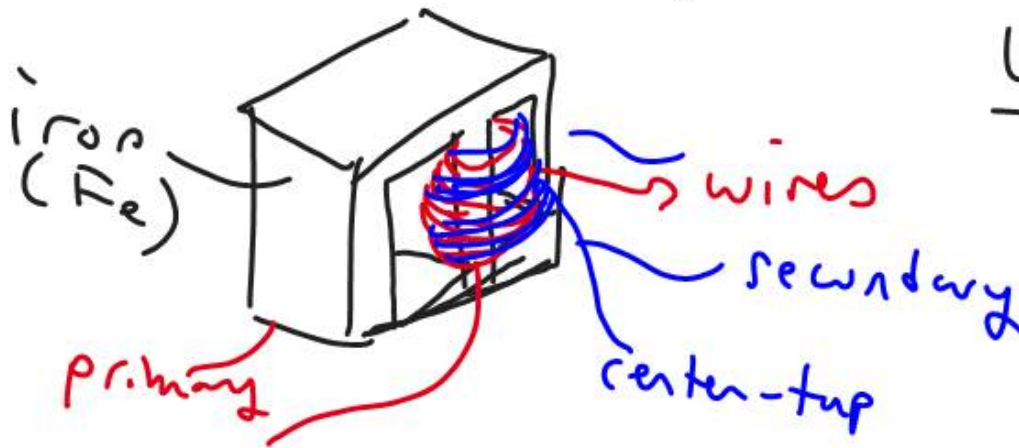
$D_2 \rightarrow FB$
 $D_1 \rightarrow RB$

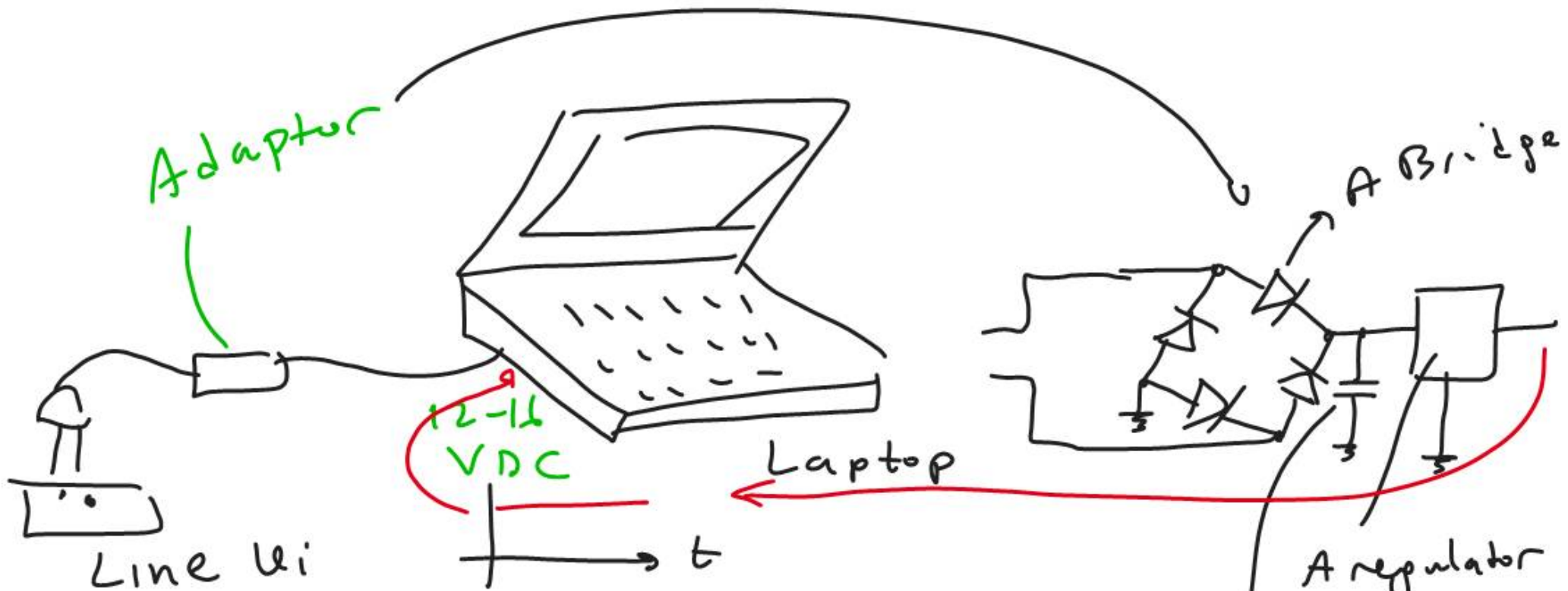


$$V_{avg} = \frac{2V_p}{\pi} = 0.636V_p$$

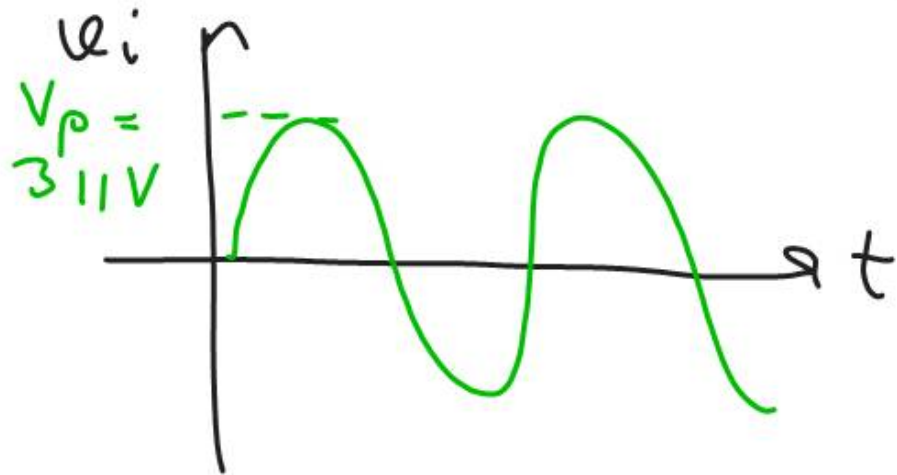
$$\frac{u_2}{u_1} = \frac{N_2}{N_1}$$

$$\frac{i_2}{i_1} = \frac{N_1}{N_2}$$





Line has an ac voltage of 220 Vrms.



$$V_p = \sqrt{2} \cdot 220$$

$$\approx 311V.$$

A Rectifier with a filter