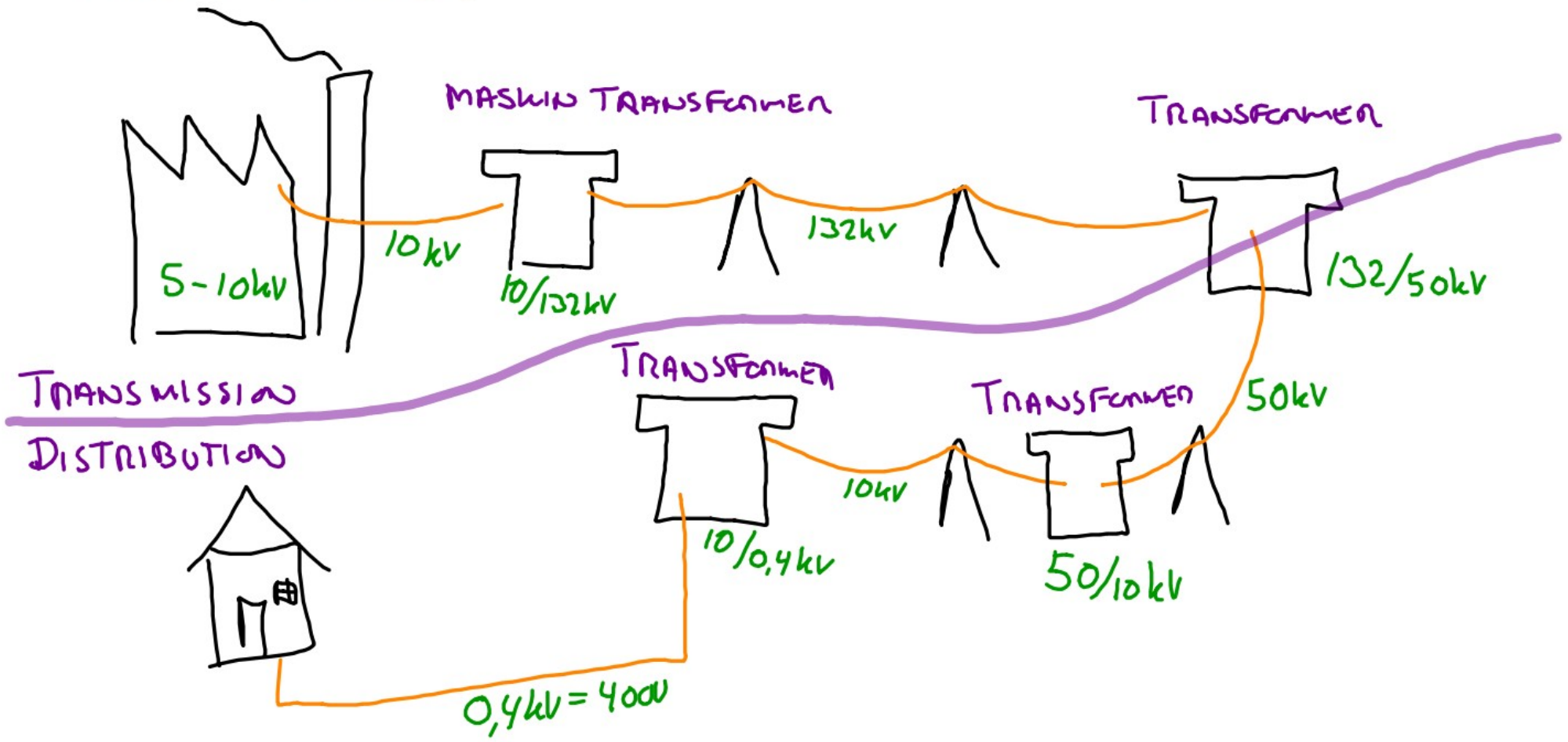
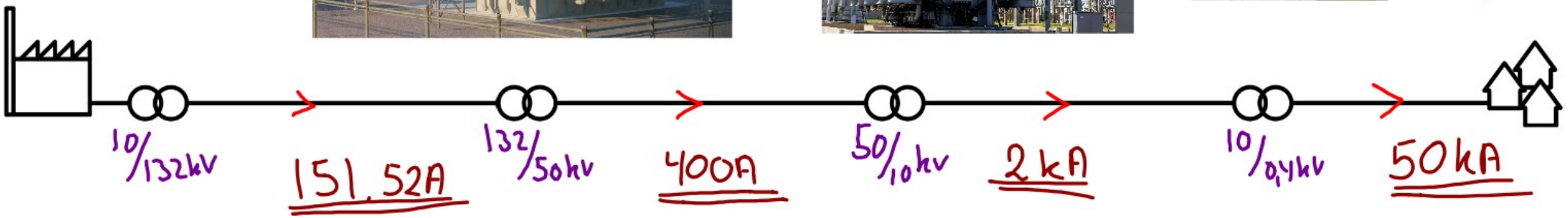
TRANSFORMATION

I DAGLIG TALE = TRAFO

TRANSFORMER



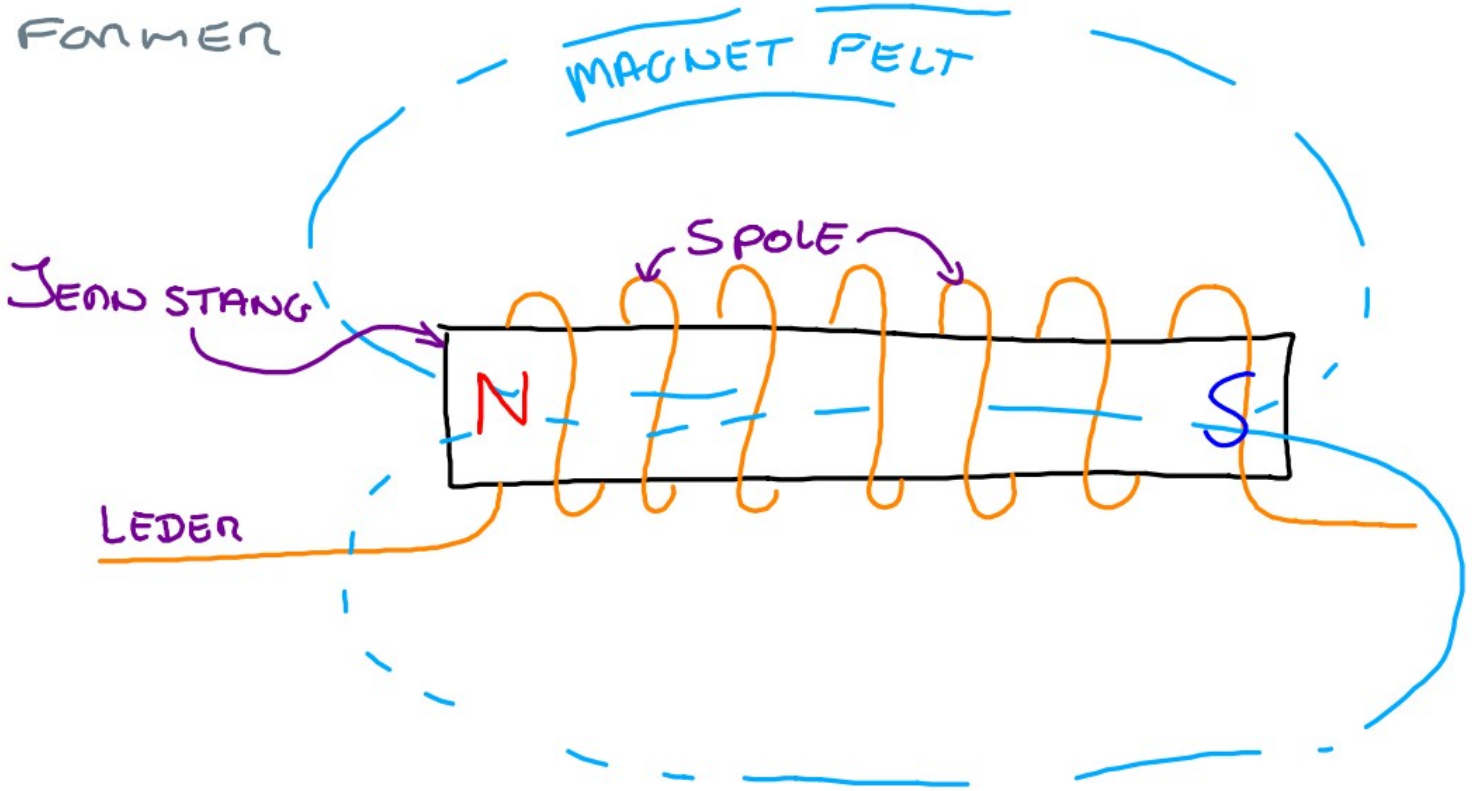
TRANSFORMATION



$$I = \frac{P}{U}$$

TRANSFORMATION

TRANSFORMER



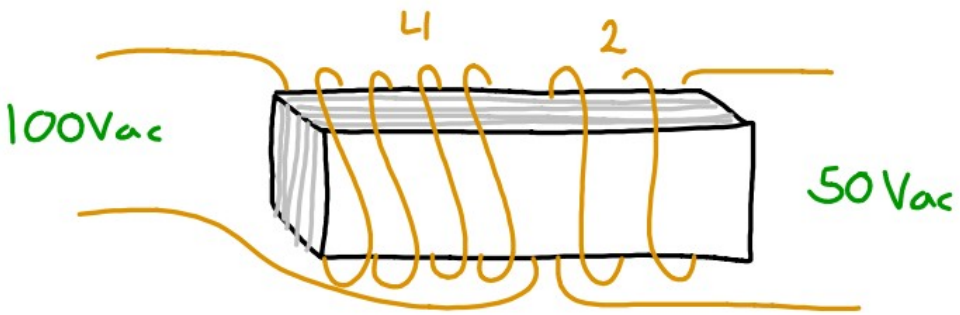
VED D_C = ELEKTRO MAGNET

VED A_C = TRANSFORMER EFFEKT

TRANSFORMATION

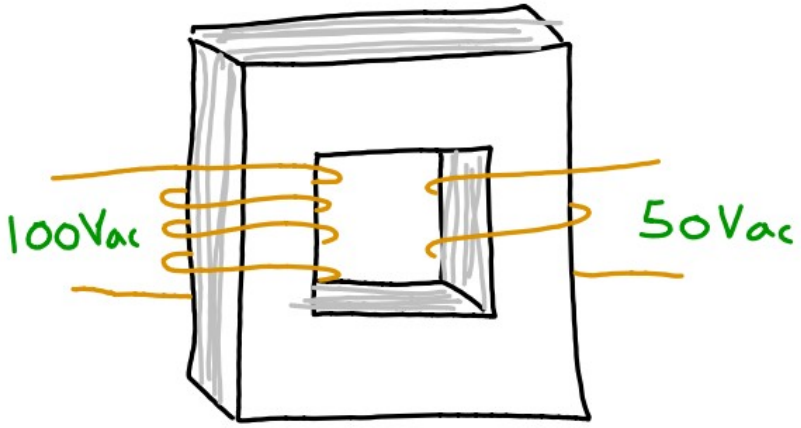
TRAFO / TRANSFORMER

JERNSTANG AF LAMELLER



INEFFEKTIV TRODS LAMELLERNE !

JERNKERNE TRAFO AF LAMELLER

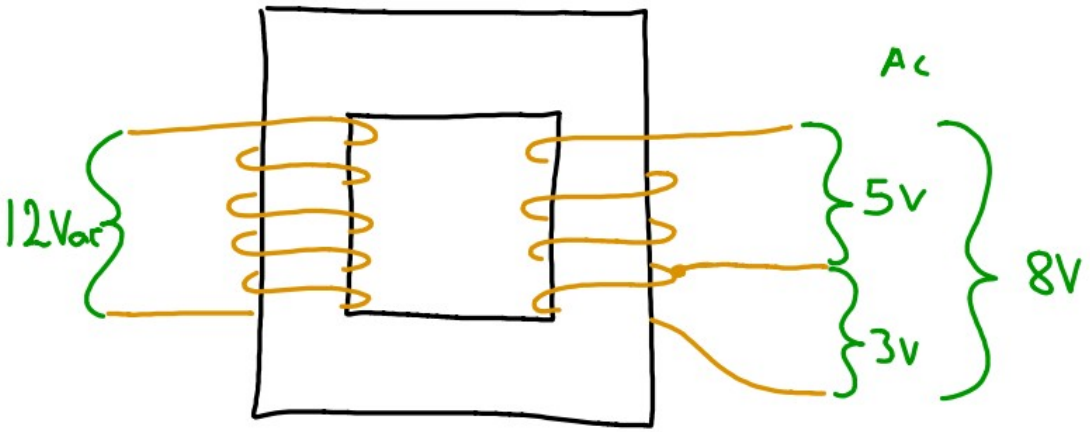


BEDRE NYTTEVIRKNING

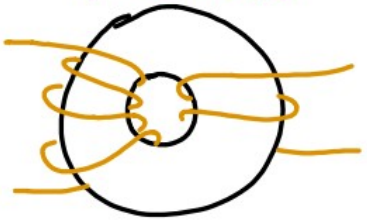
Trans Formation

Trafo med forskellige spændinger

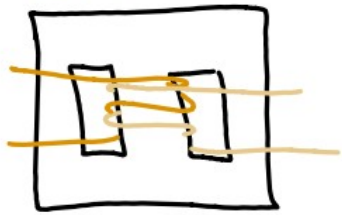
Ringe Transformer



Ringtrafo



Jernkerne



TRANSFORMATION

TRANSFORMERENS FORHOLD

η

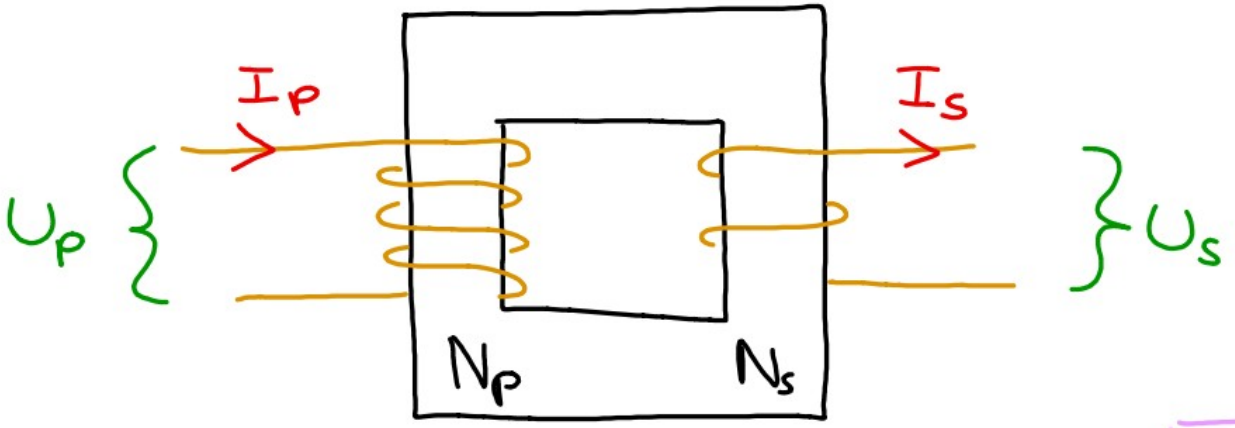
(LILLE N)

OMSÆTNINGSFORHOLD

TABSFRI TRAFO

PRIMÆRSIDEN (PRI)

SEKUNDÆRSIDEN (SEK)



N = VINDINGER (ANTAL)

EFFEKTEN = S [VA]

"TRAFO STØRRELSEN"

ENS PÅ BÅDE PRIM/SEK

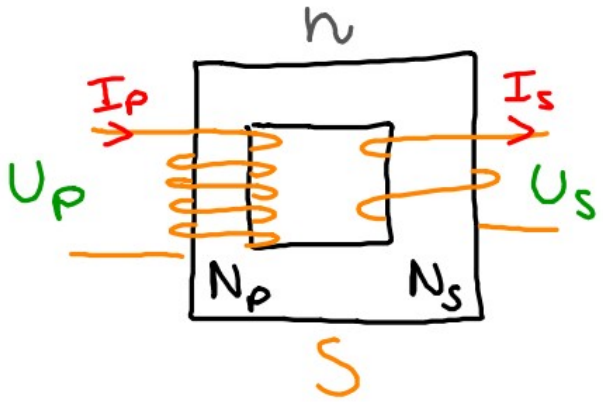
PRI / SEK

KAN OGSE BENÆVNES

1 og 2 ($U_P = U_1$)

TRANSFORMER

OVERSIGT



n = OMSÆTNINGS FORHOLDET

S = EFFEKTEN (STØRELSEN) [VA]
DEN KUN ÉN GANGDET TABSFRI

U_P = PRI. SPÆNDING [V]

U_S = SEK. SPÆNDING [V]

I_P = PRI. STRØM (STRØMFORBRUG) [A]

I_S = SEK. STRØM (YDEEVNEN) [A]

N_P = PRI. VINDINGER [VIN]

N_S = SEK VINDINGER [VIN]

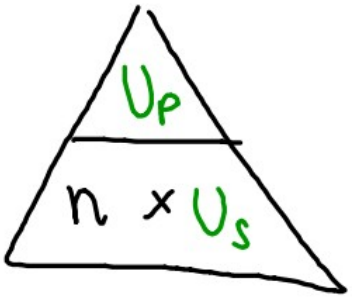
N/V = VINDINGER PR. VOLT [VIN/V]

V/N = VOLT PR. VINDING [V/VIN]

TRANSFORMER

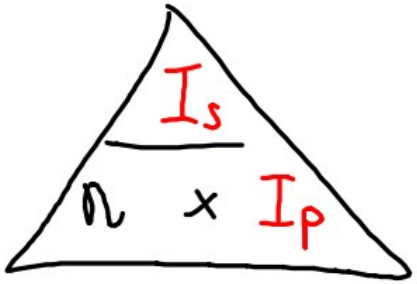
TRANS FORMER LIGNINGEN

$$n = \frac{U_p}{U_s} = \frac{N_p}{N_s} = \frac{I_s}{I_p}$$



SPÆNDING [V]

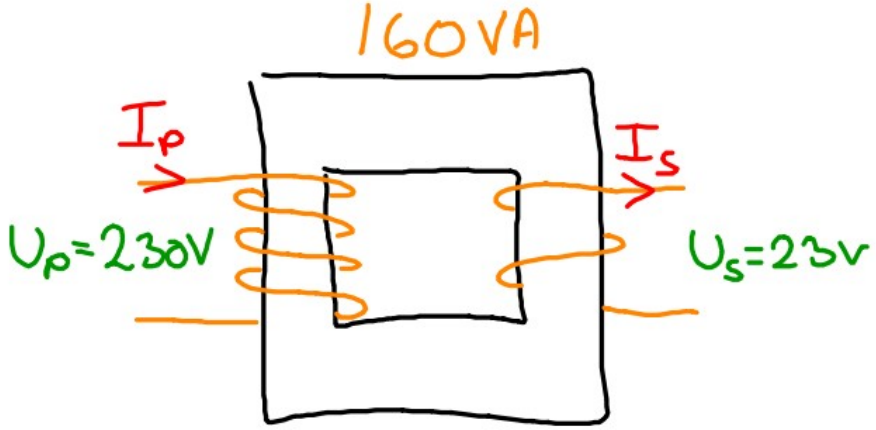
VINDINGER [VIN]



STRØM [A]

TRANSFORMER

EKSEMPEL



$$n = \frac{U_p}{U_s} = \frac{230}{23} = 10$$

$$I_p = \frac{S}{U_p} = \frac{160}{230} = 695{,}65\,mA$$

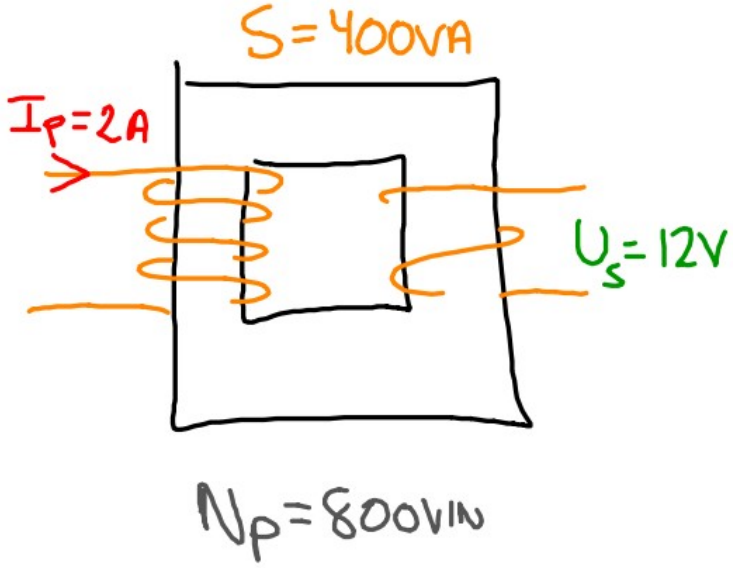
$$I_s = \frac{S}{U_s} = \frac{160}{23} = 6{,}96\,A$$

ELLER

$$I_s = I_p \times n = 0{,}69565 \times 10 = 6{,}96\,A$$

TRANSFORMER

EKSEMPEL



$$U_p = n \times U_s = 16{,}67 \times 12 = 200V$$

$$n = \frac{I_s}{I_p} = \frac{33{,}33}{2} = 16{,}67$$

$$I_s = \frac{S}{U_s} = \frac{400}{12} = 33{,}33A$$

$$N_s = \frac{N_p}{n} = \frac{800}{16{,}67} = 48_{VIN}$$

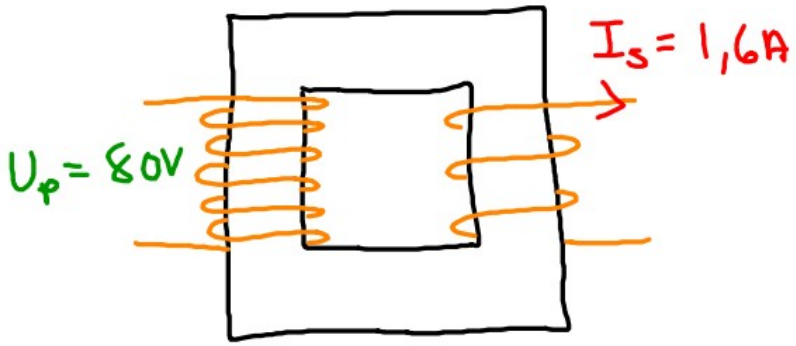
$$V/N = \frac{U_p}{N_p} = \frac{200}{800} = 250mV/_{VIN}$$

$$N/V = \frac{N_p}{U_p} = \frac{800}{200} = 4_{VIN}/_{V}$$

TRANSFORMER

EKSEMPEL

$n = 7{,}5$



$N_s = 40\ V_{IN}$

FIND: I_p, U_s, S, N_p, V/N, V/N

$$I_p = \frac{I_s}{n} = \frac{1{,}6}{7{,}5} = 21333\,mA$$

$$U_s = \frac{U_p}{n} = \frac{80}{7{,}5} = 10{,}67V$$

$$S = U_s \times I_s = 10{,}67 \times 1{,}6 = 17{,}072VA$$

$$N_p = n \times N_s = 7{,}5 \times 40 = 300V_{IN}$$

$$V/N = \frac{U_p}{N_p} = \frac{80}{300} = 266{,}67mV/V_{IN}$$

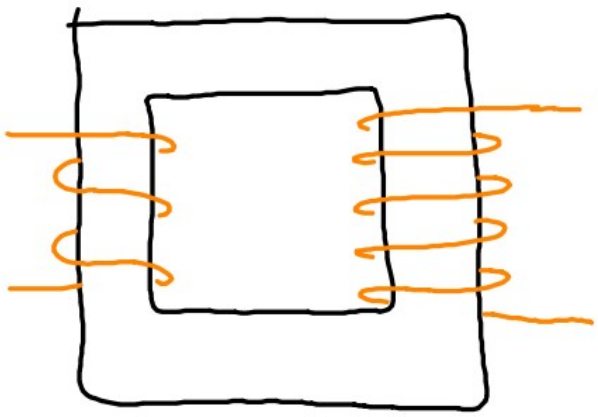
$$N/V = \frac{N_p}{U_p} = \frac{300}{80} = 3{,}75V_{IN}/V$$

TRANSFORMER

EKSEMPEL

$S = 350VA$

$n = 0,05$



$N_S = 2500 V_{IN}$

$V/N = 3,2 V/V_{IN}$

FIND $U_P, U_S, I_P, I_S, V/N, N_P$

$N_P = n \times N_S = 0,05 \times 2500 = 125 V_{IN}$

$U_P = V/N \times N_P = 3,2 \times 125 = 400V$

$U_S = V/N \times N_S = 3,2 \times 2500 = 8kV$

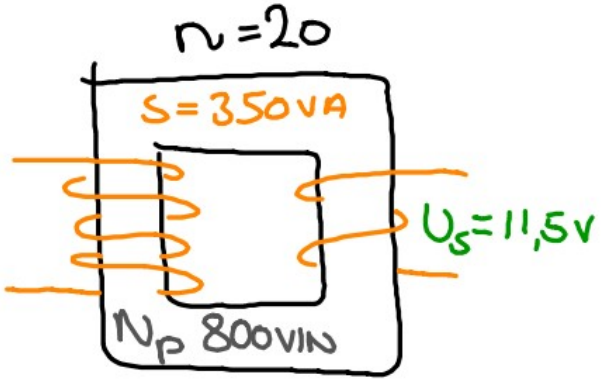
$I_P = \frac{S}{U_P} = \frac{350}{400} = 875mA$

$I_S = \frac{S}{U_P} = \frac{350}{8000} = 43,75mA$

$N/V = \frac{N_P}{U_P} = \frac{125}{400} = 0,3125 V_{IN}/V$

TRANSFORMER

CHEAT SHEET



1. START MED DE GRATIS OPLYSNINGER
2. FIND S ELLER n
3. BEREGN TREKANTER △

$U_P = U_S \times n = 11{,}5 \times 20 = 230V$

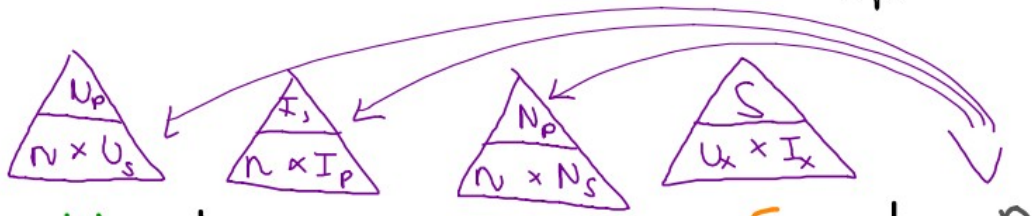
$I_S = \frac{S}{U_S} = \frac{350}{11{,}5} = 30{,}43A$

$N/_V = \frac{N_P}{U_P} = \frac{800}{230} = 3{,}48 VIN/_V$

$I_P = \frac{S}{U_P} = \frac{350}{230} = 1{,}52A$

$N_S = \frac{N_P}{n} = \frac{800}{20} = 40VIN$

$V/_N = \frac{U_P}{N_P} = \frac{230}{800} = 287{,}5 mV/_{VIN}$



	U	I	N	S	n	N/V	V/N
P	230V	1,52A	800 VIN	= 350VA	= 20	= 3,48 VIN/V	= 287,5 mV/VIN
S	11,5V	30,43A	40 VIN				