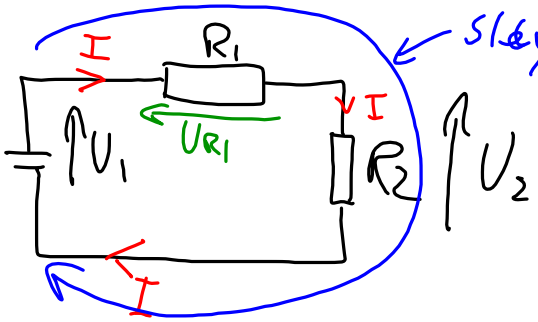


$U_{R1} = I \cdot R_1$

$U_1 - U_{R1} - U_2 = 0$ ← Kirchoffs spenningslov

$U_1 = U_{R1} + U_2$

$U_1 = I \cdot R_1 + I \cdot R_2 = I(R_1 + R_2)$

$I = \frac{U_1}{R_1 + R_2} = \frac{5{,}0\,[V]}{1500\,[\Omega] + 2000\,[\Omega]} = \frac{5{,}0\,[V]}{3500\,[\Omega]}$

$= 1{,}43 \cdot 10^{-3}\,[A] = 1{,}43\,[mA]$

m

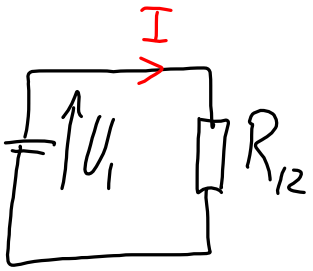
$U_2 = I \cdot R_2 = 1{,}43 \cdot 10^{-3}\,[A] \cdot 2000\,[\Omega]$

$= 1{,}43 \cdot 10^{-3} \cdot 2{,}0 \cdot 10^{3}\,[V]$

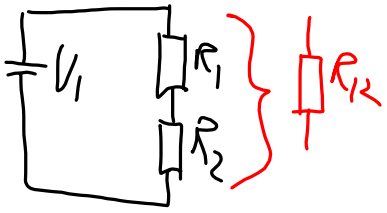
$= 1{,}43 \cdot 2{,}0\,[V] = 2{,}86\,[V]$

Ekvivalent skjema

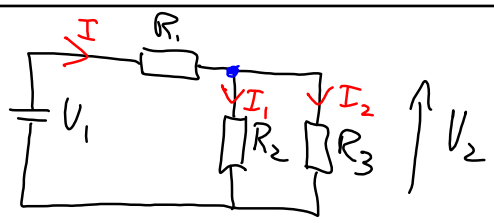
Seriekobling av R_1 og R_2



$I = \frac{U_1}{R_{12}}$



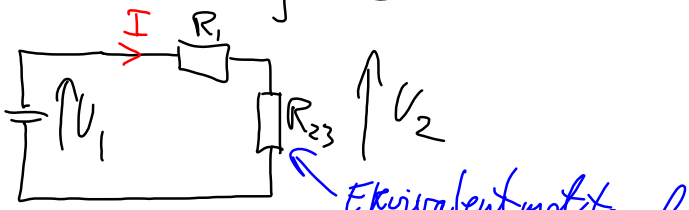
$R_{12} = R_1 + R_2$

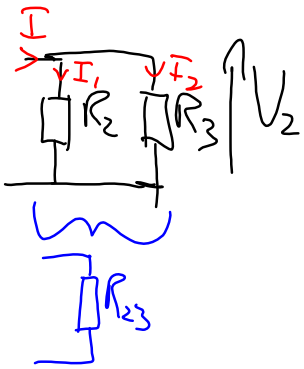


$I - I_1 - I_2 = 0$ Kirchoff's strømlov

$I = I_1 + I_2$

Ekvivalent skjema





$I = I_1 + I_2$

$\frac{U_2}{R_{23}} = \frac{U_2}{R_2} + \frac{U_2}{R_3}$

$\frac{1}{R_{23}} = \frac{1}{R_2} + \frac{1}{R_3} = \frac{R_3}{R_2 \cdot R_3} + \frac{R_2}{R_2 \cdot R_3} = \frac{R_3 + R_2}{R_2 \cdot R_3}$

$\frac{R_2 \cdot R_3}{R_{23}} = R_3 + R_2$

$R_2 \cdot R_3 = (R_3 + R_2) \cdot R_{23}$

$\frac{R_2 \cdot R_3}{R_3 + R_2} = R_{23}$ ← Parallell kobling av R_2 og R_3

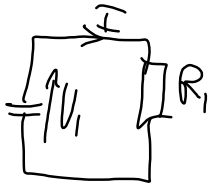
$I = \frac{U_1}{R_1 + R_{23}}$

Effekt

Symbol: P

Benevnelsen [W]

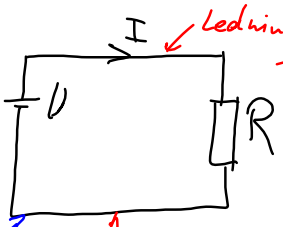
$P = U \cdot I$



$U_1 = 10{,}0\,V \quad R_1 = 5{,}0\,\Omega$

$I = \frac{U_1}{R_1} = \frac{10{,}0\,[V]}{5{,}0\,[\Omega]} = 2{,}0\,[A]$

$P = U \cdot I = 10{,}0\,[V] \cdot 2{,}0\,[A] = 20{,}0\,[W]$



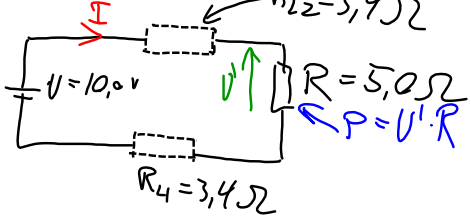
$I = 2{,}0\,[A]$

300 m
$1{,}5\,[mm^2]$

Ledning → veldig liten motstand

$R_L = 3{,}4\,[\Omega]$

Ekvivalent skjema $R_{L2} = 3{,}4\,\Omega$



$I = \frac{U}{R + 2 \cdot R_L} = \frac{10{,}0\,[V]}{(5{,}0 + 2 \cdot 3{,}4)\,[\Omega]} = \frac{10{,}0\,[V]}{11{,}8\,[\Omega]} = 0{,}84\,[A]$

$P = U' \cdot I = R \cdot I \cdot I = R \cdot I^2 = 5{,}0\,\Omega \cdot 0{,}84^2\,[A^2] = 3{,}52\,[W]$

Effekt i ledning

$P_L = 2 \cdot R_L \cdot I^2 = 2 \cdot 3{,}4 \cdot 0{,}84^2 = 4{,}8\,[W]$