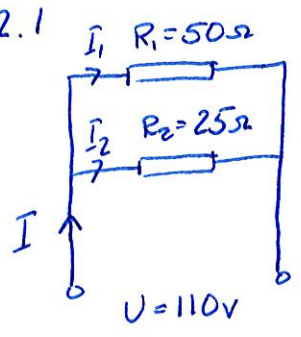


3.2 PARALLELLKOPPLUNG

3.2.1



$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{50\Omega} + \frac{1}{25\Omega}$$

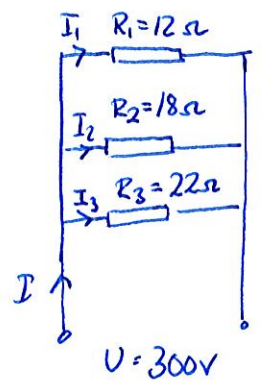
$$R_T = \underline{\underline{16,7\Omega}}$$

$$I = \frac{U}{R_T} = \frac{110V}{16,7\Omega} = \underline{\underline{6,6A}}$$

$$I_1 = \frac{U}{R_1} = \frac{110V}{50\Omega} = \underline{\underline{2,2A}}$$

$$I_2 = \frac{U}{R_2} = \frac{110V}{25\Omega} = \underline{\underline{4,4A}}$$

3.2.2



$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = \frac{1}{12\Omega} + \frac{1}{18\Omega} + \frac{1}{22\Omega}$$

$$R_T = \underline{\underline{5,42\Omega}}$$

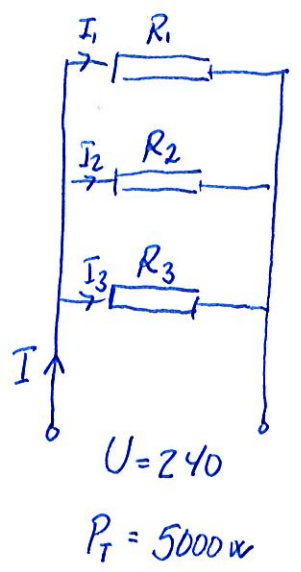
$$I = \frac{U}{R_T} = \frac{300V}{5,42\Omega} = \underline{\underline{55,4A}}$$

$$I_1 = \frac{U}{R_1} = \frac{300V}{12\Omega} = \underline{\underline{25A}}$$

$$I_2 = \frac{U}{R_2} = \frac{300V}{18\Omega} = \underline{\underline{16,7A}}$$

$$I_3 = \frac{U}{R_3} = \frac{300V}{22\Omega} = \underline{\underline{13,6A}}$$

3.2.3



$$P = \frac{U^2}{R}$$

$$a) R_T = \frac{U^2}{P} = \frac{240V^2}{5000W} = \underline{\underline{11,5\Omega}}$$

$$\frac{1}{R_T} = \frac{1}{R} \cdot 3$$

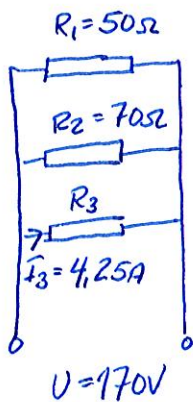
$$R = R_1 = R_2 = R_3$$

$$\frac{1}{R} = \frac{1}{R_T} \cdot 3$$

$$\Rightarrow R = \underline{\underline{34,6\Omega}}$$

$$b) I_1 = I_2 = I_3 = \frac{U}{R} = \frac{240V}{34,6} = \underline{\underline{6,94A}}$$

3.2.4



$$a) R_3 = \frac{U}{I_3} = \frac{170V}{4,25A} = \underline{\underline{40\Omega}}$$

$$b) I_1 = \frac{U}{R_1} = \frac{170V}{50\Omega} = \underline{\underline{3,40A}}$$

$$I_2 = \frac{U}{R_2} = \frac{170V}{70\Omega} = \underline{\underline{2,43A}}$$

$$I = I_1 + I_2 + I_3 = 3,40A + 2,43A + 4,25A = 10,08A \approx \underline{\underline{10A}}$$

$$c) P_T = U \cdot I = 170V \cdot 10A = \underline{\underline{1700W}}$$

$$P_1 = U \cdot I_1 = 170V \cdot 3,40A = \underline{\underline{578W}}$$

$$P_2 = U \cdot I_2 = 170V \cdot 2,43A = \underline{\underline{413W}}$$

$$P_3 = U \cdot I_3 = 170V \cdot 4,25A = \underline{\underline{723W}}$$

3.2.5

$$a) \frac{1}{R_T} = \frac{1}{R} \cdot 10 = \frac{1}{50\Omega} \cdot 10 \quad R_T = \underline{\underline{5\Omega}}$$

$$b) I_T = \frac{U}{R_T} = \frac{110V}{5} = \underline{\underline{22A}}$$

$$I = I_1 = I_2 = I_3 \dots = \frac{U}{R} = \frac{110V}{50\Omega} = \underline{\underline{2,2A}}$$

$$c) I_T = I \cdot n \quad n - \text{antall resistanser}$$

$$\frac{22A}{2} = 2,2A \cdot n$$

$$n = \frac{11A}{2,2A} = \underline{\underline{5}}$$