(3)

3.1 $U = 35\sqrt{}\,kV$

$I = 100\,A$

$P, Q, S = ?$

$\cos\varphi = 0,9$

$\sin\varphi = \sqrt{1-\cos^2} =$

$= 0,436$

a) 3~ $P = \sqrt{3}UI\cos\varphi =$

$= \sqrt{3} \cdot 35\sqrt{} \cdot 10^3 \cdot 100 \cdot 0,9$

$= 5,4995\,MW$

$S = \sqrt{3}UI = 1,73 \cdot 35\sqrt{} \cdot 10^3 \cdot 100$

$= 6,0995\,MVA$

$Q = \sqrt{3}UI\sin\varphi =$

$= 1,73 \cdot 35 \cdot 10^3 \cdot 100 \cdot 0,436$

$= 2,6\sqrt{}\,MVA_r$

b) 1~

$S = UI = 35 \cdot 10^3 \cdot 100 = 3,5\,MVA$

$P = UI\cos\varphi = 35 \cdot 10^3 \cdot 100 \cdot 0,9$

$P = 3,1\sqrt{}\,MW$

$Q = UI\sin\varphi = 3\sqrt{} \cdot 10^3 \cdot 100 \cdot 0,436 = 1,526\,MVA_r$

c) — $P = UI = 35 \cdot 10^3 \cdot 100 = 3,\sqrt{}\,MW$

3.2 $l = 100\,km$

$\rho_{Al} = 0,028\,\Omega mm^2/m$

Al i 121 / 19, $\sqrt{}\,mm^2$

$R = \rho\frac{l}{S} = \frac{0,028 \cdot 100 \cdot 10^3}{121} = 23,14\,\Omega$

a) 3~ $\Delta P_1 = RI^2 = 23,14 \cdot 100^2$

$\Delta P_1 = 23\sqrt{}\,kW$

$\Delta P_3 = 3\Delta P_1 = 694,2\,kW$

b) 1~

$\Delta P = 2RI^2 = 2 \cdot 23,14 \cdot 100^2$

$\Delta P = 462,8\,kW$

c) 3~ $\Delta P = 2RI^2 = 462,8\,kW$