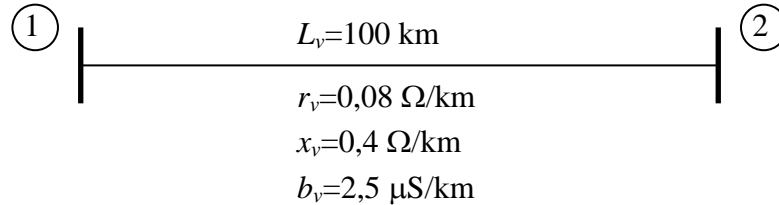
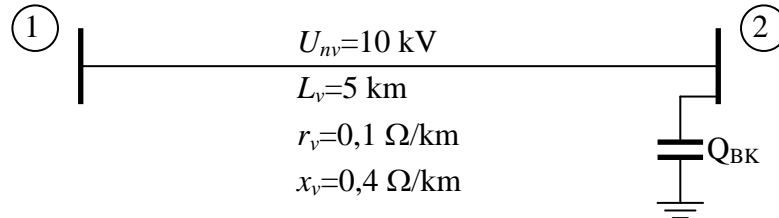


ELEKTRIJADA 2006: POWER SYSTEM ANALYSIS

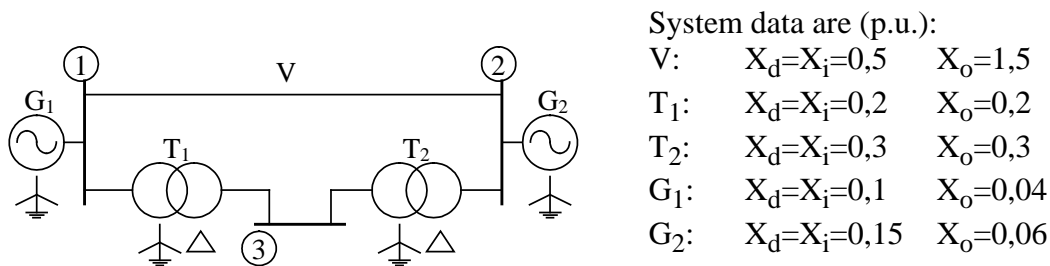
1. Transmission line is shown on figure. Voltages at buses 1 and 2 are $\underline{U}_1=230 \text{ kV} /6^\circ$ and $\underline{U}_2=220 \text{ kV} /0^\circ$. Using “ π ” model of line find active and reactive power at beginning and end of line.



2. Power system, shown on the figure, supply consumption area with constant power $\underline{S}_p=(5+j4) \text{ MVA}$. Voltage magnitude at bus 1 is $U_1=10,5 \text{ kV}$. With shunt capacitor bank on the bus 2 voltage magnitude at bus 2 is $U_2=10 \text{ kV}$. Find reactive power of shunt capacitor bank.



3. Simply power system is shown on the figure. In the case of single phase to ground fault at bus 3 find fault current at bus 3. Voltage at bus 3 before fault was $U_{3fr}=1 \text{ r.j.}$



4. We have nesimetrical system of three phase current: $I_A=1,0 \text{ p.u.} /0^\circ$; $I_B=1,0 \text{ p.u.} /-120^\circ$; $I_C=0 \text{ p.u.}$ Find simetrical coponent for this current and draw vector diagrams for all three symetrical systems.

5. Simply power system is given on the figure. Find voltage magnitude and angles after first iteration using Newton-Raphsons method for load flow calculation.

