

TUGAS ANALISA ALIRAN DAYA

(Dikumpul saat UAS, 21 Desember 2017)

Figure 54 shows the one-line diagram of a simple three-bus power system with generation at buses 1 and 3. The voltage at bus 1 is $V_1 = 1.025\angle 0^\circ$ per unit. Voltage magnitude at bus 3 is fixed at 1.03 pu with a real power generation of 300 MW. A load consisting of 400 MW and 200 Mvar is taken from bus 2. Line impedances are marked in per unit on a 100 MVA base. For the purpose of hand calculations, line resistances and line charging susceptances are neglected.

(a) Using Gauss-Seidel method and initial estimates of $V_2^{(0)} = 1.0 + j0$ and $V_3^{(0)} = 1.03 + j0$ and keeping $|V_3| = 1.03$ pu, determine the phasor values of V_2 and V_3 . Perform two iterations.

(b) If after several iterations the bus voltages converge to

$$V_2 = 1.001243\angle -2.1^\circ = 1.000571 - j0.0366898 \text{ pu}$$

$$V_3 = 1.03\angle 1.36851^\circ = 1.029706 + j.0246 \text{ pu}$$

determine the line flows and line losses and the slack bus real and reactive power. Construct a power flow diagram and show the direction of the line flows.

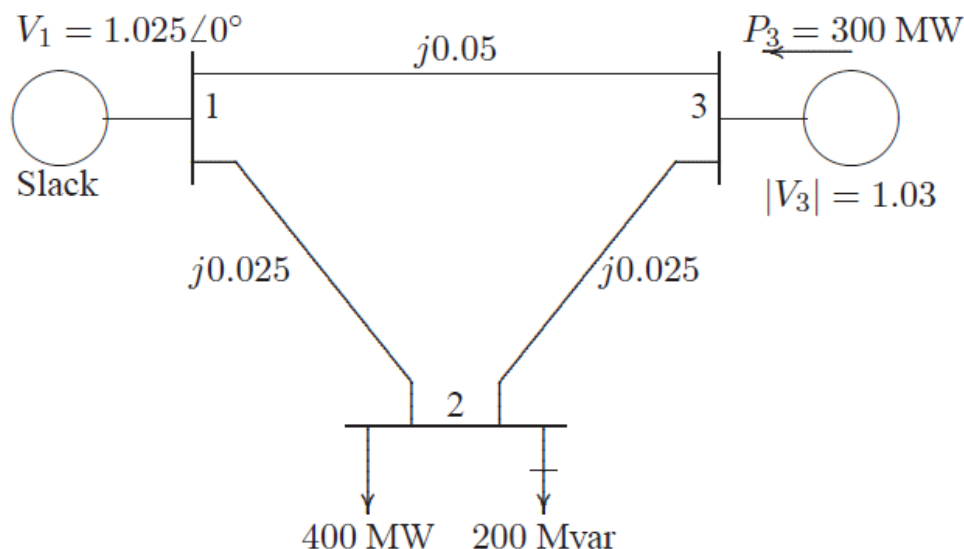


Figure 5.4

(c). Uraikan langkah-langkah penyelesaian aliran daya bila diselesaikan dengan metode **Newton- Raphson** dan **Fast Decoupled**