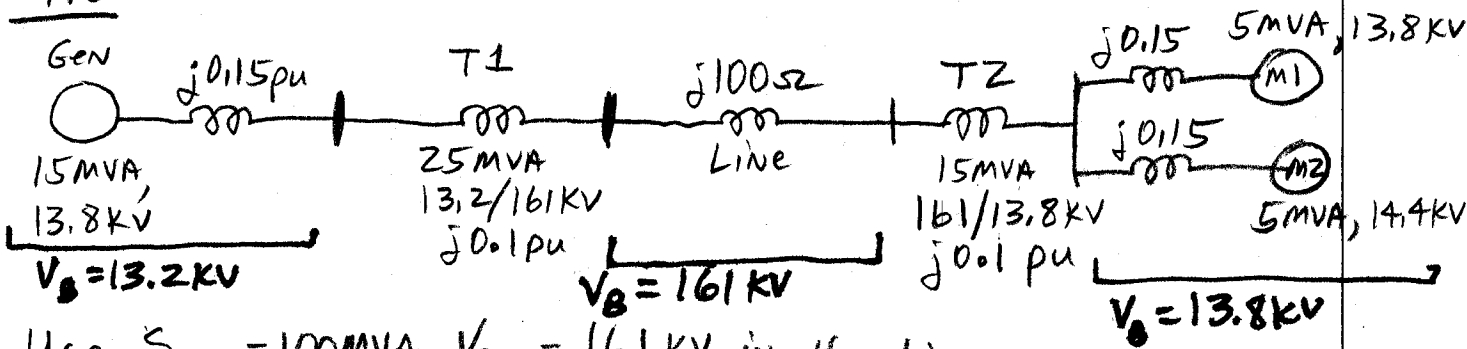


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Use $S_{B3\phi} = 100 \text{ MVA}$, $V_{BLL} = 161 \text{ kV}$ in the Line

- Starting in the line, then stepping across T1 gives a base in the gen. of $161 \text{ kV} \left(\frac{13.2}{161} \right) = \underline{13.2 \text{ kV}}$.
- From the line, stepping across T2 yields a base in the motors of $161 \text{ kV} \left(\frac{13.8}{161} \right) = \underline{13.8 \text{ kV}}$

Now, converting to the bases,

$$\text{Gen. } Z_{\text{Gen}} = j0.15 \left(\frac{100}{15} \right) \left(\frac{13.8}{13.2} \right)^2 = j1.093 \text{ pu}$$

$$\text{T1 } Z_{T1} = j0.10 \left(\frac{100}{25} \right) \left(\frac{13.2}{13.2} \right)^2 = j0.40 \text{ pu}$$

$$\text{Line, } Z_B = \frac{V_{BLL}^2}{S_{B3\phi}} = \frac{161^2}{100} = 259 \Omega$$

$$Z_{\text{Line}} = \frac{j100}{259} = j0.386 \text{ pu}$$

$$\text{T2, } Z_{T2} = j0.10 \left(\frac{100}{15} \right) \left(\frac{161}{161} \right)^2 = j0.667$$

$$\text{M1, } Z_{M1} = j0.15 \left(\frac{100}{5} \right) \left(\frac{13.8}{13.8} \right)^2 = j3.00$$

$$\text{M2, } Z_{M2} = j0.15 \left(\frac{100}{5} \right) \left(\frac{14.4}{13.8} \right)^2 = j3.27$$

