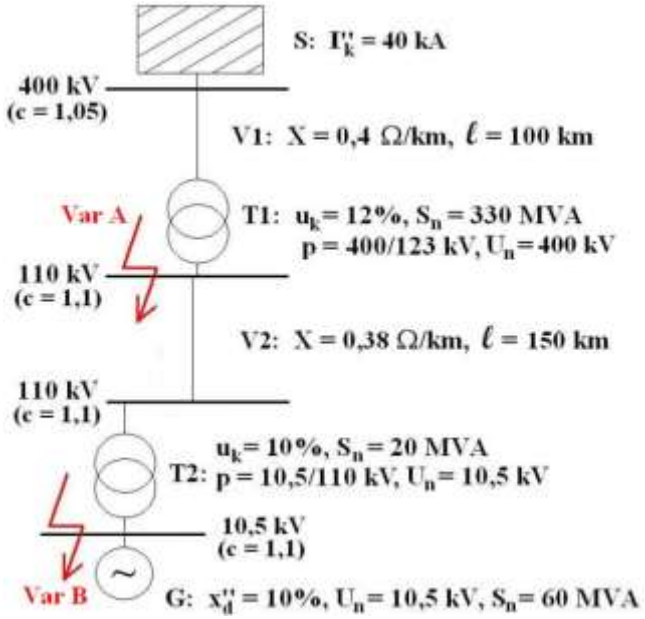
Example: Calculate the value of 3-phase short-circuit current:



Calculation:

Var A:

$$X_S = \frac{cU_n}{\sqrt{3}I_k^{"}}\frac{1}{(400/123)^2} = 0.573217\,\Omega$$

$$X_{V1} = Xl\frac{1}{(400/123)^2} = 3.78225\,\Omega$$

$$X_{V2} = Xl = 57\,\Omega$$

$$X_{T1} = \frac{u_k U_n^2}{100S_n}\frac{1}{(400/123)^2} = 5.501455\,\Omega$$

$$X_{T2} = \frac{u_k U_n^2}{100S_n}\frac{1}{(10.5/110)^2} = 60.5\,\Omega$$

$$X_G = \frac{x_d^{"} U_n^2}{100S_n}\frac{1}{(10.5/110)^2} = 20.16667\,\Omega$$

Var B:

$$X_S = \frac{cU_n}{\sqrt{3}I_k^{"}}\frac{1}{(400/123)^2}\frac{1}{(110/10.5)^2} = 0.00522291\Omega$$

$$X_{V1} = Xl\frac{1}{(400/123)^2}\frac{1}{(110/10.5)^2} = 0.034462\,\Omega$$

$$X_{V2} = Xl\frac{1}{(110/10.5)^2} = 0.5193595\,\Omega$$

$$X_{T1} = \frac{u_k U_n^2}{100S_n}\frac{1}{(400/123)^2}\frac{1}{(110/10.5)^2} = 0.0501269\,\Omega$$

$$X_{T2} = \frac{u_k U_n^2}{100S_n}\frac{1}{(110/10.5)^2} = 0.55125\,\Omega$$

$$X_G = \frac{x_d^{"} U_n^2}{100S_n} = 0.18375\,\Omega$$

Final short-circuit reactance and the 3-phase short-circuit current:

Var A: $X_k = 9.198323\Omega \rightarrow I_{k3f} = \frac{cU_n}{\sqrt{3}X_k} = 7594.8\ A$

Var B: $X_k = 0.158631\Omega \rightarrow I_{k3f} = \frac{cU_n}{\sqrt{3}X_k} = 42037.12\ A$