

Ej 1

Modelado de Componentes

Nivel de Tensión 150 kv

T1 & T3:

$X_p = 0,05 \text{ pu}$

$X_s = 0,01 \text{ pu}$

$X_t = 0,08 \text{ pu}$

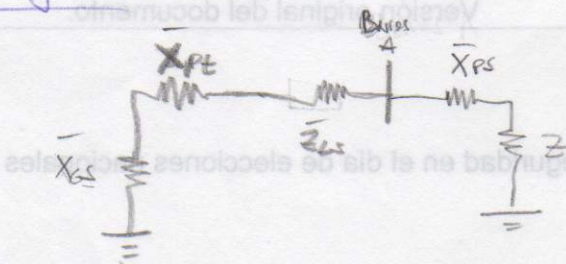
en Ω
 $\Rightarrow X_p = 0,05 \cdot \frac{150^2}{40} = 28,1 \ \Omega$
 $X_s = 5,63 \ \Omega$
 $X_t = 45 \ \Omega$

G: $X_{g0} = X_{p0} = 0,2 \times \frac{150^2}{50} = 90 \text{ j } (\Omega)$

Trámite	Unidad	Autor
$X_{g0} = 0,14 \times \frac{150^2}{50} =$	63 j (Ω)	Añon, Fabio
Impedancia:	$Z_{e150} = 80,7 \ \Omega$	Sánchez, Fredy
		Yedrezewski, Nicolas
		Muselli, Alvaro
		Bonjour, David
		Tallman, Alberto
		Rodriguez, Antonio

Impedancia Thevenin

Comentarios	Nº de revisión	Fecha elaborada	REVISIONES
$\bar{Z}_s \text{ y } \bar{Z}_0:$		18 oct-2009	
		00	

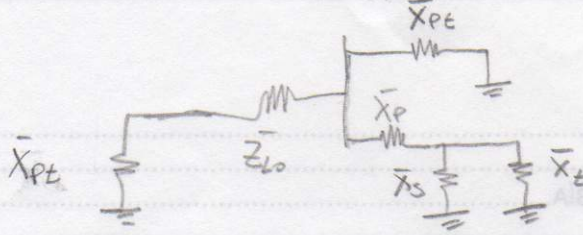


$\bar{Z}_s = \bar{Z}_0 = (\bar{Z}_{Ls} + \bar{X}_{pt} + \bar{X}_{gs}) // (\bar{X}_{ps} + \bar{Z}) = 72,4 \text{ j } (\Omega)$

$f_0 = \frac{\bar{Z}_s}{(\bar{X}_{gs} + \bar{X}_{pt})} = 0,4182$

Z₀

Barra A



$$\bar{Z}_0 = \left[(\bar{Z}_{L0} + \bar{X}_{pt}) \parallel \bar{X}_{pt} \right] \parallel \left[\bar{X}_p + \bar{X}_s \parallel \bar{X}_z \right] = 18,7 j \quad (\Omega)$$

$$\bar{I}_h = \frac{\bar{Z}_0}{(\bar{X}_{pt} + \bar{Z}_{L0})} = 0,1815$$

Corrientes y Tensión antes del defecto

Corriente por el relé: $\bar{I}_{ad,1} = \frac{155000/\sqrt{3}}{(\bar{X}_p + \bar{X}_s + \bar{Z})} = -719 j \quad (A)$

Tensión en el relé: $\bar{U}_{ad,1} = \frac{155000}{\sqrt{3}} + \bar{I}_{ad,1} \cdot \bar{Z}_{Ls} = 96680 V$
Fase 1 Fase Neutro

Corrientes:

$$\bar{I}_h = \frac{155000/\sqrt{3}}{(\bar{Z}_s + \bar{Z}_a + \bar{Z}_0)} = -547,4 j \quad (A)$$

$$\bar{I}_d = f_d \cdot \bar{I}_h = -229 j \quad (A) ; \bar{I}'_d = \bar{I}_d + \bar{I}_{ad,1} = -948 j \quad (A)$$

$$\bar{I}_i = \bar{I}_d$$

$$\bar{I}_h = f_h \cdot \bar{I}_h = -99,1 j \quad (A)$$

$$\bar{I}_1 = -1276 j \quad (A)$$

$$\boxed{\pm_1 = 1276 \quad (A)}$$

$$\bar{I}_2 = -623 + 489 j \quad (A)$$

$$\bar{I}_3 = 623 + 489 j \quad (A)$$

Tensión del Redo: (Fase Neutro)

$$\bar{U}_d = -\bar{I}_d \cdot (\bar{X}_{gs} + \bar{X}_p + \bar{X}_t) + \bar{U}_{nad} = 59335 \text{ (V)}$$

$$\bar{U}_i = -\bar{I}_i \cdot (\bar{X}_{gs} + \bar{X}_p + \bar{X}_t) = -37345 \text{ (V)}$$

$$\bar{U}_n = -\bar{I}_n \cdot (\bar{X}_p + \bar{X}_t) = -7247 \text{ (V)}$$

$$\bar{U}_1 = 14742 \text{ (V)}$$

Cálculo \bar{Z}_v

$$\bar{Z}_v = \frac{\bar{U}_1}{\bar{I}_1 + 2 \cdot \bar{I}_n} = 10j \text{ (\Omega)}$$