

EJEMPLO DE DESEQUILIBRIO DE TENSIONES ANTE CORTO UNA FASE A TIERRA

(Trafo DyN 11 60/15 kV. Se supone falta a tierra en fase 1, por tanto $V_1 = 0$)

$$R_{pat} := 8 \, \Omega \quad z_{cc} := 8\% \quad U_n := 15.75 \, kV \quad P_n := 7.5 \, MVA \quad X_T := 1j \cdot z_{cc} \cdot \frac{U_n^2}{P_n}$$

$$\frac{U_n}{\sqrt{3}} = 9.093 \, kV \quad MVA \equiv MW \quad X_T = 2.646j \, \Omega$$

$$V_1 := 0$$

$$I_{cc} := \frac{\frac{U_n}{\sqrt{3}}}{R_{pat} + X_T} \quad |I_{cc}| = (1.079 \cdot 10^3) \, A$$

$$V_N := -R_{pat} \cdot I_{cc} \quad V_N = (-8.197 + 2.711j) \, kV \quad |V_N| = 8.633 \, kV$$

$$V_2 := V_N + \frac{(U_n)}{\sqrt{3}} \cdot e^{\left(\frac{2 \cdot \pi}{3}\right) 1j} \quad V_2 = (-12.743 + 10.586j) \, kV$$

$$|V_2| = 16.567 \, kV$$

$$V_3 := V_N + \frac{(U_n)}{\sqrt{3}} \cdot e^{\left(\frac{4 \cdot \pi}{3}\right) 1j} \quad V_3 = (-12.743 - 5.164j) \, kV$$

$$|V_3| = 13.75 \, kV$$

$$\frac{|V_N|}{\frac{U_n}{\sqrt{3}}} = 0.949 \quad \text{FACTOR DE TIERRA :} \quad \frac{|V_2|}{\frac{U_n}{\sqrt{3}}} = 1.822 \quad \frac{|V_3|}{\frac{U_n}{\sqrt{3}}} = 1.512$$

$$V_{res} := V_1 + V_2 + V_3 \quad |V_{res}| = 26.057 \, kV \quad \dots \text{aproximadamente igual a:} \quad |3 \cdot V_N| = 25.9 \, kV$$

$$FT2(Rp) := \frac{\left| -Rp \cdot \frac{\frac{U_n}{\sqrt{3}}}{Rp + X_T} + \frac{(U_n)}{\sqrt{3}} \cdot e^{\left(\frac{2 \cdot \pi}{3}\right) 1j} \right|}{\frac{U_n}{\sqrt{3}}}$$

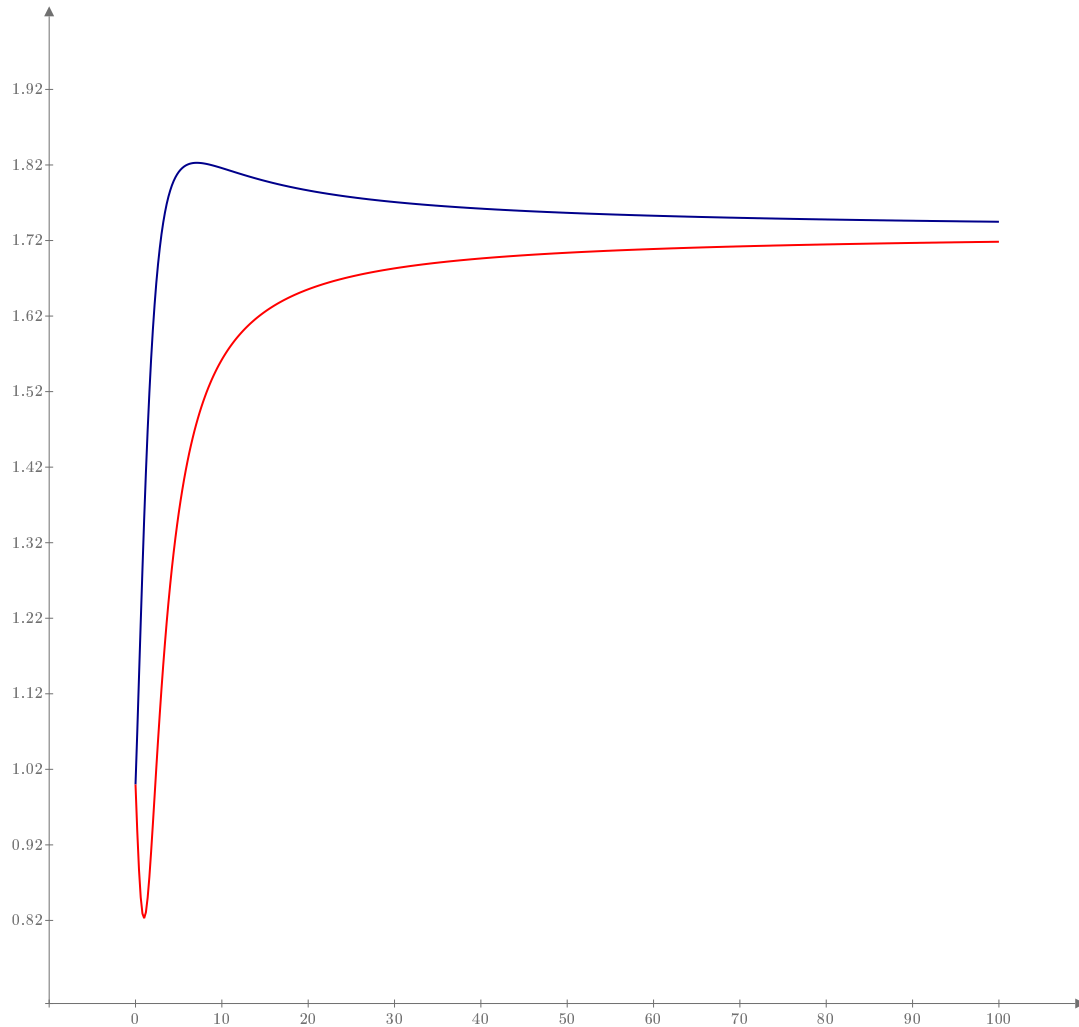
$$FT3(Rp) := \frac{\left| -Rp \cdot \frac{\frac{U_n}{\sqrt{3}}}{Rp + X_T} + \frac{(U_n)}{\sqrt{3}} \cdot e^{\left(\frac{4 \cdot \pi}{3}\right) 1j} \right|}{\frac{U_n}{\sqrt{3}}}$$

$$FT2(0.2 \Omega) = 1.068$$

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$$\frac{FT2(Rp \cdot \Omega) (S \cdot \Omega)}{FT3(Rp \cdot \Omega) (S \cdot \Omega)}$$

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$$\frac{Rp \cdot \Omega (\Omega)}{Rp \cdot \Omega (\Omega)}$$