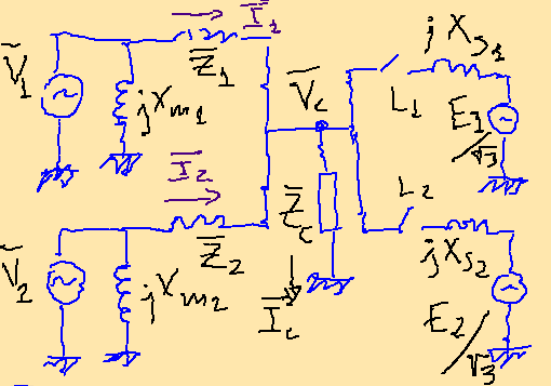


① $X_{m_1} = \frac{400^2}{8600} = \boxed{18.60\,\Omega}$

$X_{m_2} = \frac{380^2}{8500} = \boxed{16.99\,\Omega}$

$\frac{488/\sqrt{3}}{17.04} = 16.53$

$\arctg \frac{2400}{\sqrt{3} < 488 < 17.04} = 9.460°$

$\bar{Z}_1 = 16.53 \times \frac{.4^2}{6.1^2} \angle 9.460° =$

$= \boxed{0.07110\,\Omega \angle 9.460°}$

$\bar{Z}_2 = \boxed{0.04707\,\Omega \angle 15.20°}$

$X_{S_1} = X_{S_2} = 0.1 \times \frac{.4^2}{.25} = \boxed{.064\,\Omega}$

② $\bar{Z}_c = \frac{.4^2}{.35} \angle \arccos .85 =$

$= (.3386 + j.2409)\,\Omega$

$\bar{I}_c = \frac{\bar{V}_c}{\bar{Z}_c} = \frac{400/\sqrt{3}}{\bar{Z}_c} =$

$= (429.4 + j\,266.2)\,A$

$\frac{\bar{V}_1 - \bar{V}_c}{\bar{Z}_1} = \bar{I}_1$

$\frac{\bar{V}_2 - \bar{V}_c}{\bar{Z}_2} = \bar{I}_2$

$\bar{I}_1 + \bar{I}_2 = \bar{I}_c$

$\frac{.38}{6} \times \frac{\bar{U}_{RED}}{\sqrt{3}} = \bar{V}_2$

$\frac{.4}{6.1} \times \frac{\bar{U}_{RED}}{\sqrt{3}} = \bar{V}_1$

$k\bar{V}_2 = \bar{V}_1 \;,\; k = \frac{.4}{6.1} \times \frac{6}{.38}$

$\bar{V}_2 = \frac{\bar{I}_c + \bar{V}_c\left(\frac{1}{\bar{Z}_1} + \frac{1}{\bar{Z}_2}\right)}{k/\bar{Z}_1 + 1/\bar{Z}_2} =$

$= 241.1\,V \angle -1.134°$

$\Rightarrow \bar{V}_{RED} = 6595\,V \angle -1.134°$

$\boxed{U_{RED} = 6595\,V}$

$\bar{I}_1 = 272.8\,A \angle -24.27°$

$\bar{I}_2 = 238.4\,A \angle -40.37°$

$\bar{I}_{MT_2} = 271.8 \times \frac{.4}{6.1} \angle -24.27° +$

$+ 238.4 \times \frac{.38}{6} \angle -40.37° +$

$+ \frac{\bar{V}_1}{jX_{m_1}} \times \frac{.4}{6.1} + \frac{\bar{V}_2}{jX_{m_2}} \times \frac{.38}{6} =$

$= 33.54\,A \angle -34.27°$

$\boxed{I_{MT_2} = 33.54\,A}$

③ MS1: 3 pp $\Rightarrow$ 1000 rpm

$\Rightarrow P_{MAX} = \frac{1000 \times 2\pi \times 453.6}{60}$

$= 47.50\,kW$

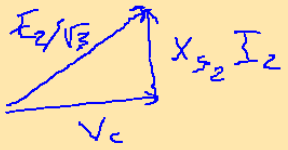
MS2: 2 pp $\Rightarrow$ 1500 rpm

$\Rightarrow P_{MAX} = 350\,kW$.

$P_{carga} = 297.5\,kW$

$Q_{carga} = 184.4\,kVAr$

$\Rightarrow$ MS2 entrega toda activa para no superar 250kVA:



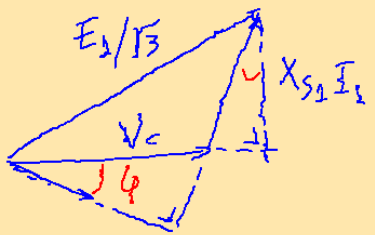
$I_2 = \frac{250k}{\sqrt{3} \times 400} = 360.9\,A$

$\frac{E_2}{\sqrt{3}} = \left(V_c^2 + (X_{S_2} I_2)^2\right)^{1/2}$

$\Rightarrow E_2 = 402.0\,V$

$\Rightarrow \boxed{i_2 = 1.340\,A}$

MS1 entrega el resto de la activa y toda la reactiva:



$I_1 = \frac{\sqrt{47.5^2 + 184.4^2}}{\sqrt{3} \times 400} k =$

$= 274.8\,A$

$\varphi = \arctg \frac{184.4}{47.5} = 75.56°$

$\frac{E_1}{\sqrt{3}} = \left\{\left(V_c + X_S I_1 \operatorname{sen}\varphi\right)^2 + \right.$

$\left. + \left\{X_S I_1 \cos\varphi\right\}^2\right]^{1/2} \Rightarrow$

$\Rightarrow E_1 = 429.6\,V$

$\Rightarrow \boxed{i_1 = 1.432\,A}$