$V_{RSO} := 0.1046$ $V_{PSS} := 6.306$ $FREQ := 60$ $V_{peak} := 165$

$V_{PSO} := 115.89$ $V_{RSS} := 5.222$ $R_p := 3.16$ $V_{rms} := \frac{V_{peak}}{\sqrt{2}}$ $V_{rms} = 116.673$

$V_{SSO} := 25.81$ $R_{SSS} := 17.68$ $R_s := 0.29$ $R_{SSO} := 17.83$

$N := \frac{V_{PSO}}{V_{SSO}}$ $N = 4.49$ $\frac{1}{N} = 0.223$ $\frac{R_p}{N^2} = 0.157$ $\frac{R_s}{\frac{R_p}{N^2}} = 1.85$

$L_{p\_sopen} := \frac{V_{PSO}}{\left(\frac{V_{RSO}}{R_{SSO}}\right)} \cdot \frac{1}{2 \cdot \pi \cdot FREQ}$ $L_{p\_sopen} = 52.4$ $L_{p\_sshort} := \frac{V_{PSS}}{\left(\frac{V_{RSS}}{R_{SSS}}\right)} \cdot \frac{1}{2 \cdot \pi \cdot FREQ}$ $L_{p\_sshort} = 0.057$

$k := \sqrt{1 - \frac{L_{p\_sshort}}{L_{p\_sopen}}}$ $k = 0.999$ $L_{mag} := k \cdot L_{p\_sopen}$ $L_{mag} = 52.372$

$X_{mag} := 2 \cdot \pi \cdot FREQ \cdot L_{mag}$ $X_{mag} = 1.974 \times 10^{4}$ $I_{mag} := \frac{V_{rms}}{X_{mag}}$ $I_{mag} = 5.909 \times 10^{-3}$

$L_{p\_leak} := (1 - k) \cdot L_{p\_sopen}$ $\frac{L_{p\_leak}}{10^{-3}} = 28.324$ $L_{s\_leak} := \frac{L_{p\_leak}}{N^2}$ $\frac{L_{s\_leak}}{10^{-3}} = 1.405$

Per-Unitised parameters for Tom:

$VA_{rated} := 120$ $F_{ac} := 60$ $V_{sec} := V_{SSO}$ $V_{sec} = 25.81$

$P_{base} := VA_{rated}$ $\omega_{base} := 2 \cdot \pi \cdot F_{ac}$ $V_{base} := V_{sec}$ I've Per-Unitised wrt the secondary voltage

$Z_{base} := \frac{V_{base}^{2}}{P_{base}}$ $Z_{base} = 5.551$ $L_{base} := \frac{Z_{base}}{\omega_{base}}$ $L_{base} = 0.015$

$P_{PU} := \frac{VA_{rated}}{P_{base}}$ $V_{sec\_PU} := \frac{V_{sec}}{V_{base}}$ $\omega_{PU} := \frac{2 \cdot \pi \cdot F_{ac}}{\omega_{base}}$

$P_{PU} = 1$ $V_{sec\_PU} = 1$ $\omega_{PU} = 1$ belaboring the point here, deliberately

$R_{s\_PU} := \frac{R_s}{Z_{base}}$ $L_{s\_leak\_pu} := \frac{L_{s\_leak}}{L_{base}}$

$R_{s\_PU} = 0.052$ $L_{s\_leak\_pu} = 0.095$