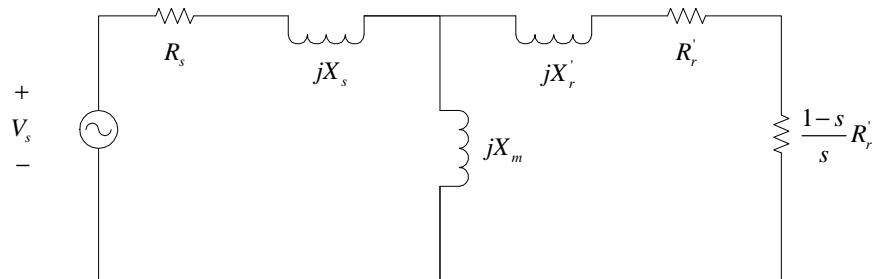


Three-Phase Induction Motors

CDR Charles B. Cameron

Synchronous frequency	$\omega_s = \frac{\omega}{P/2}$
Slip	$s = \frac{\omega_s - \omega_m}{\omega_s}$
Source impedance	$Z_s = R_s + jX_s$
Magnetic Loss	$Z_m = jX_m$
Reflected Impedance	$Z'_r = \frac{R'_r}{s} + jX'_r = R'_r + \frac{1-s}{s}R'_r + jX'_r$
Developed torque	$T_{dev} = \frac{P_{ag}}{\omega_s}$
Starting torque	$T_{start} = \frac{3R'_r(I'_r)^2}{\omega_s}$



$$\begin{aligned}
 P_s &= I_s^2 R_s & P_{R'_r} &= I_{R'_r}^2 R'_r & P_{rot} \\
 P_{IN} &= 3I_s V_s \cos \theta & P_{ag} & & P_{dev} \\
 & \uparrow & \uparrow & \uparrow & \rightarrow P_{OUT} = 3 \frac{1-s}{s} I_{R'_r}^2 R'_r
 \end{aligned}$$