

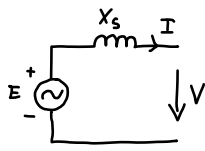
a) $S_m = 100 \text{ MVA}$

$X_s = 1 \text{ pu}$

$P = 90 \text{ MW} = 0.9 \text{ pu}$

$\cos(\phi) = 0.9$

$V = 1 \text{ pu}$



$E = V + jX_s I$

$|I| = \left(\frac{S}{V}\right)^* = 1$

$E = V + jX_s \cdot \left(\frac{S}{V}\right)^* = 1.06 e^{38^\circ}$

$|E| = 1.06$

Com $Q=0$ $\Delta I_{dc} \propto \Delta E = \frac{|E'| - |E|}{|E|} = 26.67\%$

$|E'| = 1.35 \text{ pu}$

Com $Q=0$ e $\Delta S=0$

$|E'| = 1.414 \text{ pu}$ $\Delta I_{dc} \propto \Delta E = \frac{|E'| - |E|}{|E|} = 33.15\%$

$E = V + jX_s \cdot \left(\frac{S}{V}\right)^* = 1.69 e^{32^\circ}$

$|E| = 1.69 \text{ pu}$

Com $Q=0$ $\Delta I_{dc} \propto \Delta E = \frac{|E'| - |E|}{|E|} = -20.62\%$

$|E'| = 1.35 \text{ pu}$

Com $Q=0$ e $\Delta S=0$

$|E'| = 1.414 \text{ pu}$ $\Delta I_{dc} \propto \Delta E = \frac{|E'| - |E|}{|E|} = -16.5\%$