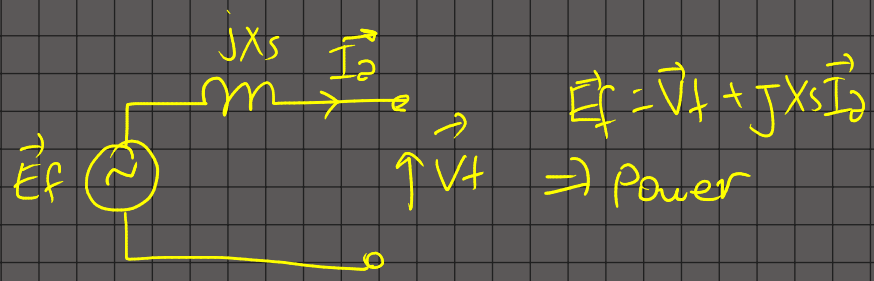
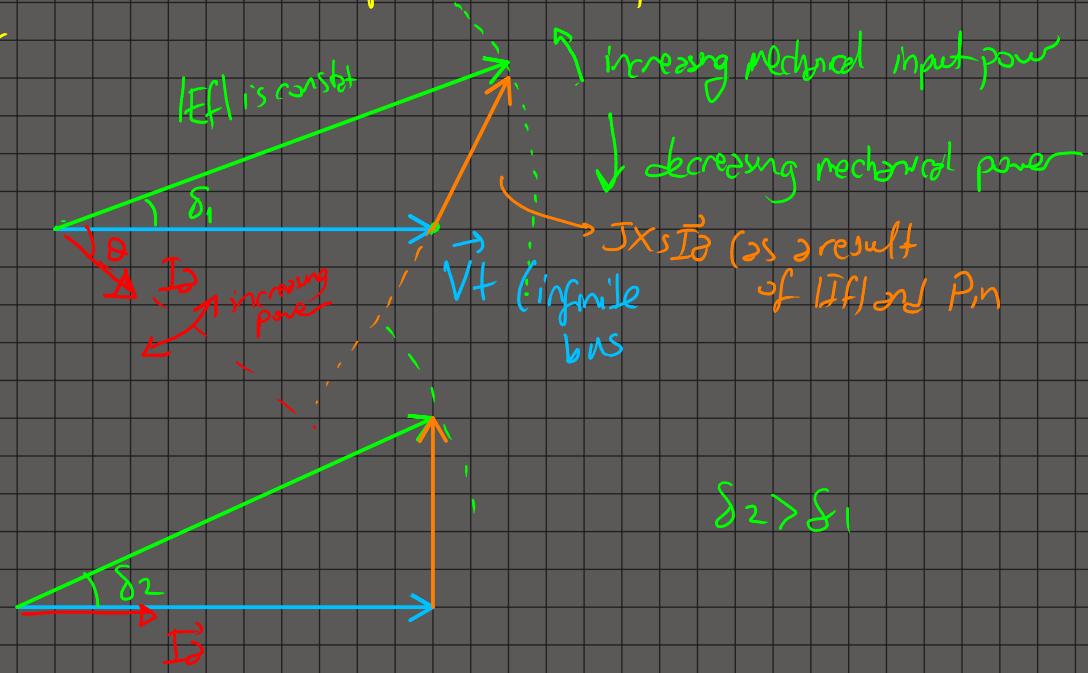
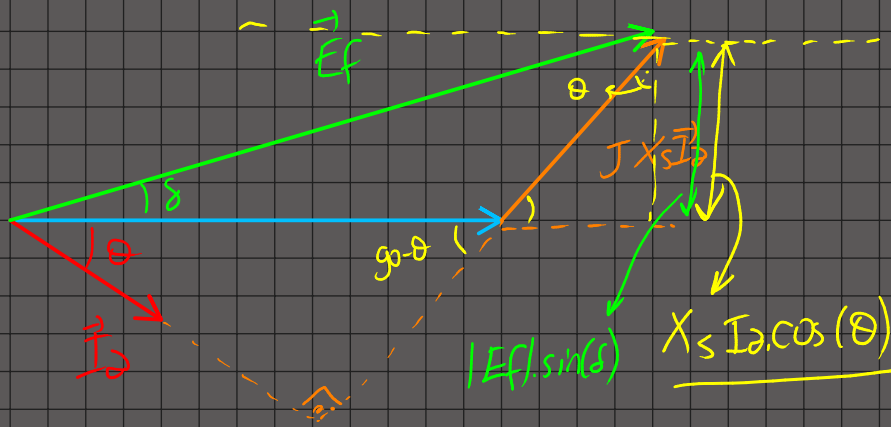


If  $I_f$  is constant  $\Rightarrow |\vec{E}_f|$  will be constant



Constant Excitation ( $I_f$ )  $\Rightarrow |\vec{E}_f|$  will be constant  
 Connected to infinite bus  $\Rightarrow \vec{V}_t$  is constant





$$P = 3V_t I_a \cos(\theta)$$

If  $V_t$  and  $P$  are constant

$$I_a \cos(\theta) = \text{constant}$$

$$|E_f| \cdot \sin(\delta) = X_s \cdot I_a \cos(\theta)$$

$$I_a \cos(\theta) = \frac{|E_f| \cdot \sin(\delta)}{X_s}$$