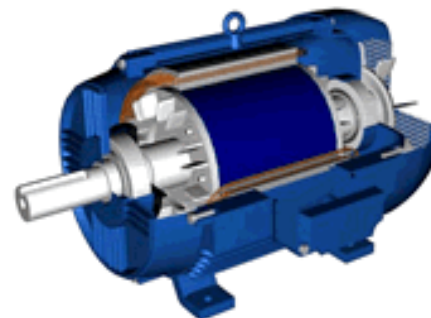
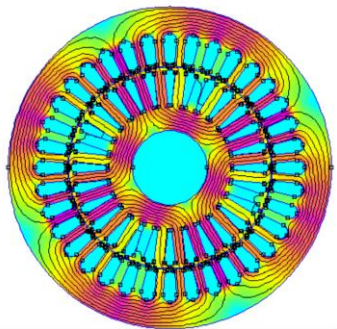
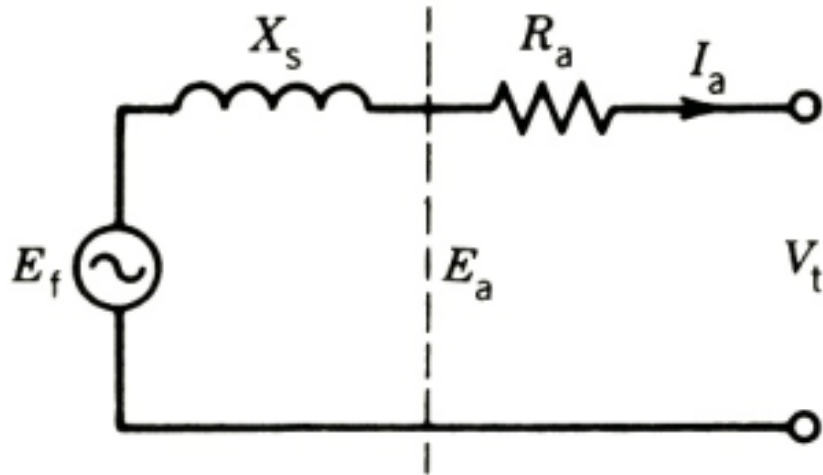


# Diagrama fasorial da máquina síncrona de polos lisos

Prof. Allan Fagner Cupertino  
[afcupertino@ieee.org](mailto:afcupertino@ieee.org)



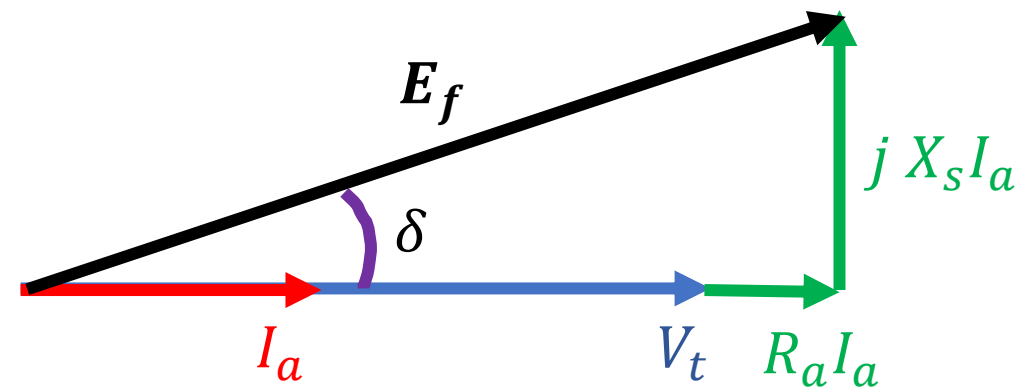
# Funcionamento como gerador



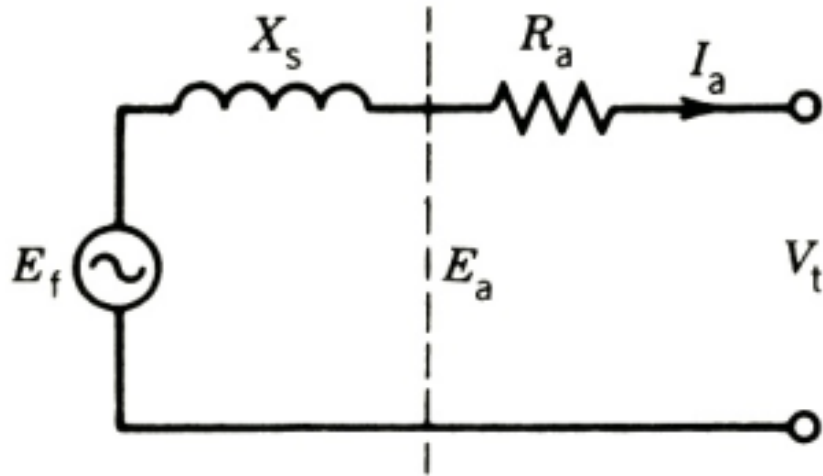
Fonte: P. C. Sen. "Principles of Electrical Machines and Power Electronics".

❑ Fator de potência unitário

$$E_f = V_t \angle 0 + R_a I_a \angle \varphi + j X_s I_a \angle \varphi$$



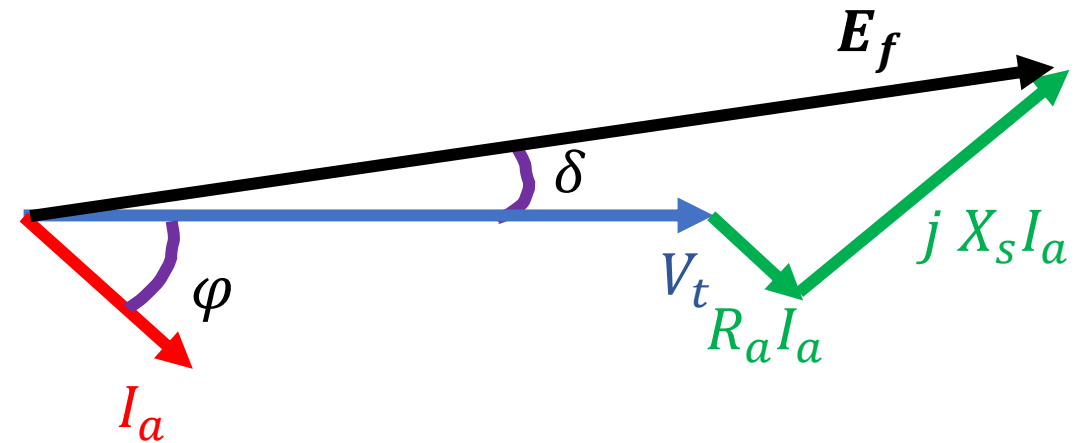
# Funcionamento como gerador



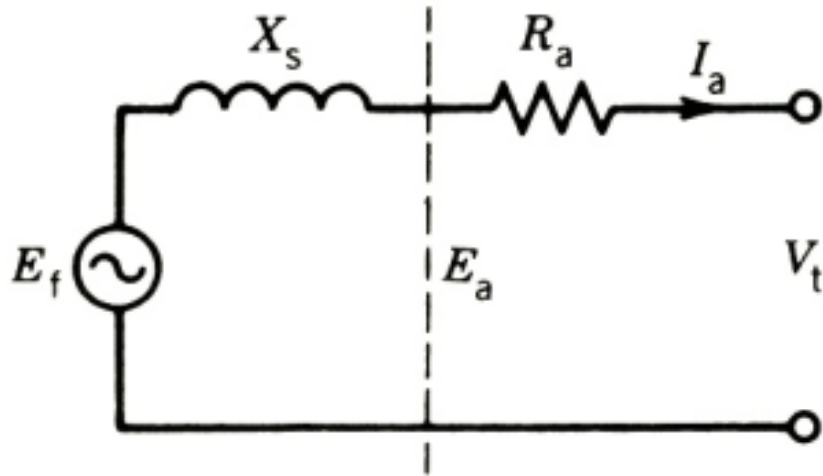
Fonte: P. C. Sen. "Principles of Electrical Machines and Power Electronics".

$$E_f = V_t \angle 0 + R_a I_a \angle \varphi + j X_s I_a \angle \varphi$$

❑ Fator de potência atrasado



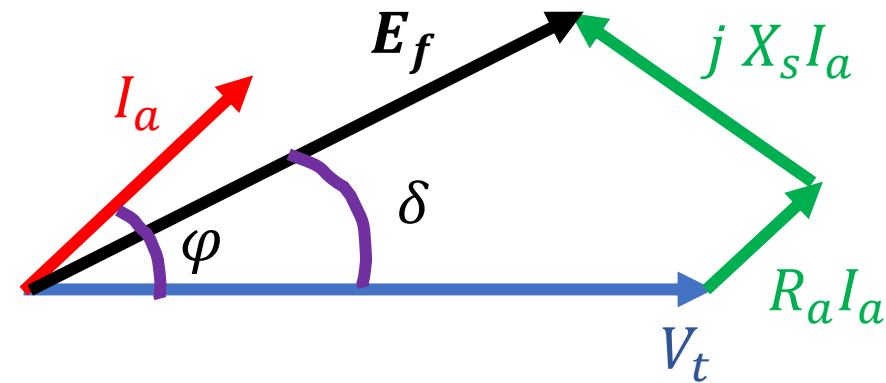
# Funcionamento como gerador



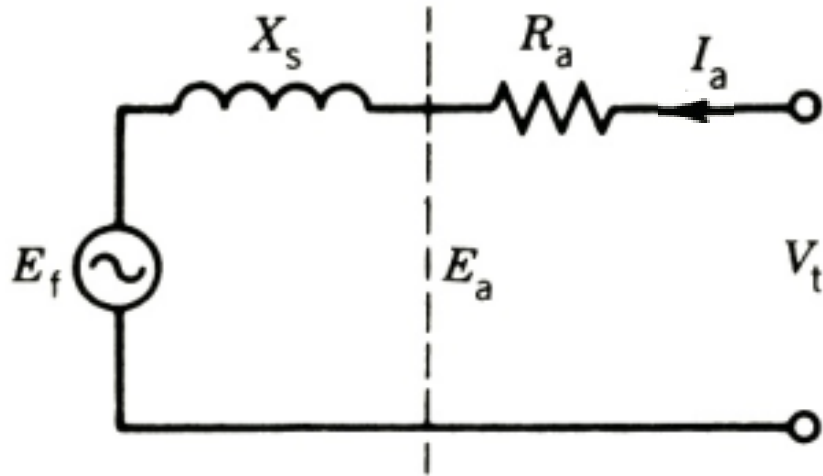
Fonte: P. C. Sen. "Principles of Electrical Machines and Power Electronics".

❑ Fator de potência adiantado

$$E_f = V_t \angle 0 + R_a I_a \angle \varphi + j X_s I_a \angle \varphi$$



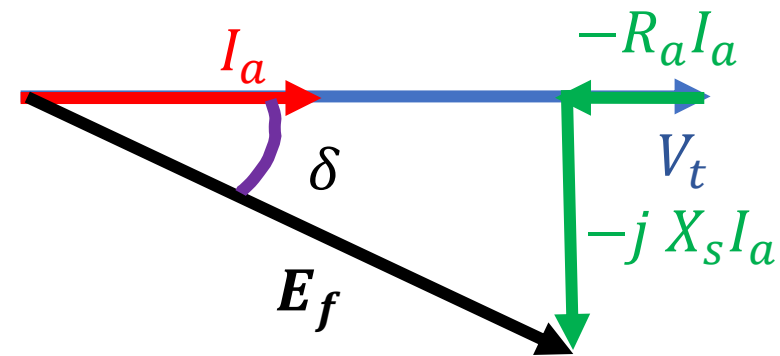
# Funcionamento como motor



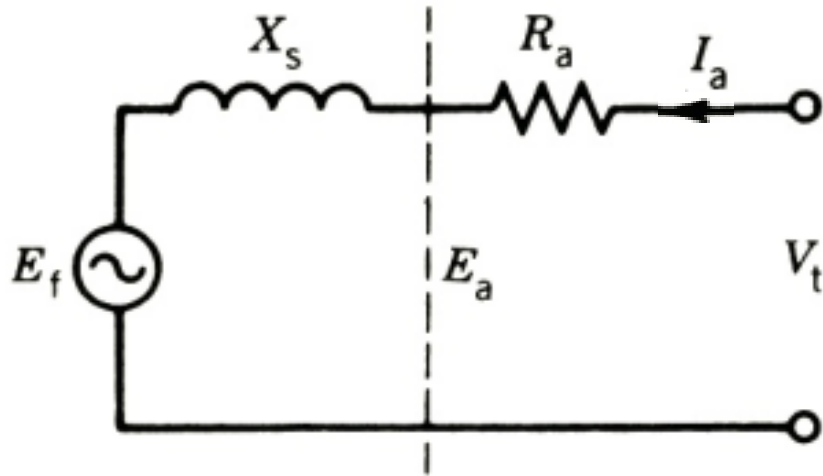
Fonte: P. C. Sen. "Principles of Electrical Machines and Power Electronics".

$$E_f = V_t \angle 0 - R_a I_a \angle \varphi - j X_s I_a \angle \varphi$$

❑ Fator de potência unitário



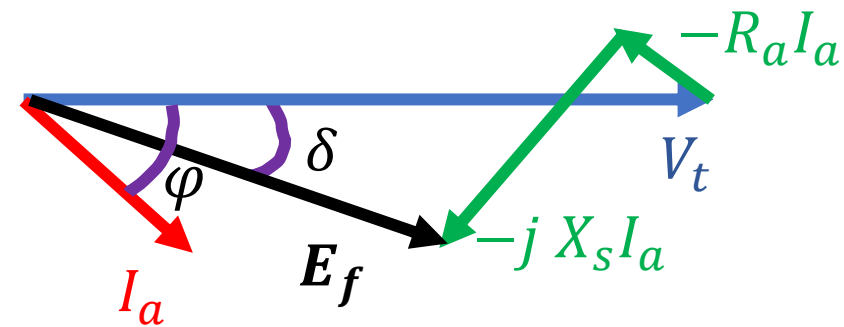
# Funcionamento como motor



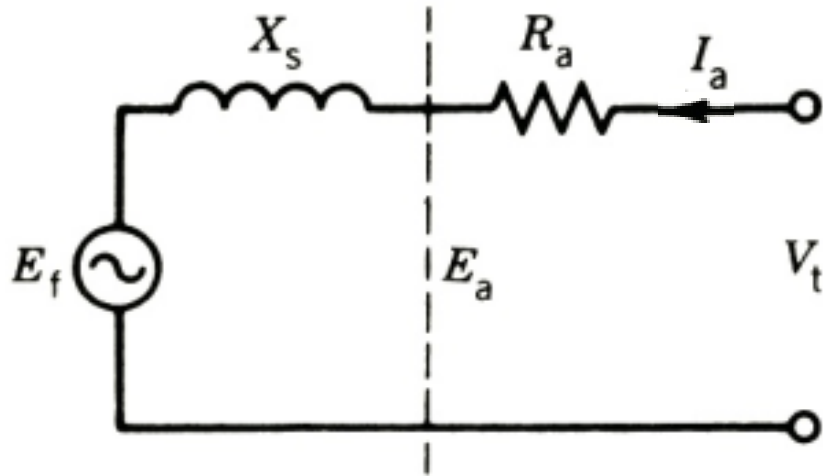
Fonte: P. C. Sen. "Principles of Electrical Machines and Power Electronics".

$$E_f = V_t \angle 0 - R_a I_a \angle \varphi - j X_s I_a \angle \varphi$$

❑ Fator de potência atrasado



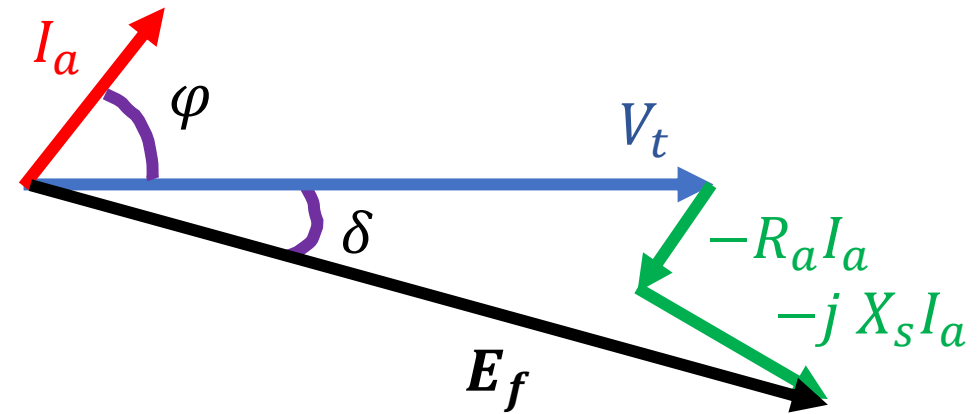
# Funcionamento como motor



Fonte: P. C. Sen. "Principles of Electrical Machines and Power Electronics".

$$E_f = V_t \angle 0 - R_a I_a \angle \varphi - j X_s I_a \angle \varphi$$

❑ Fator de potência adiantado

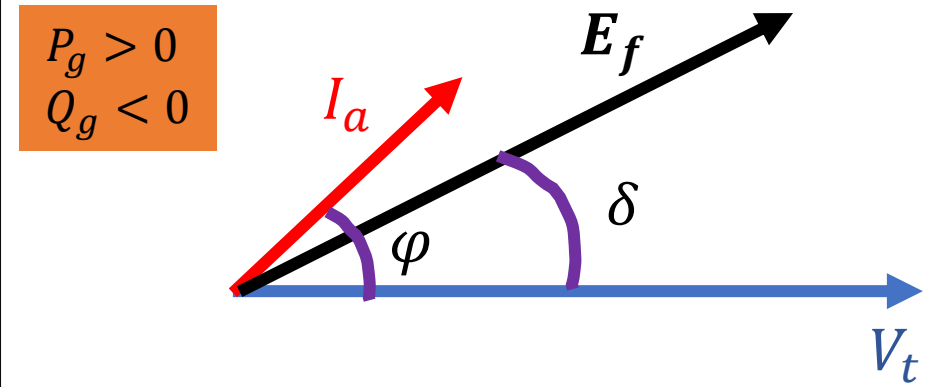
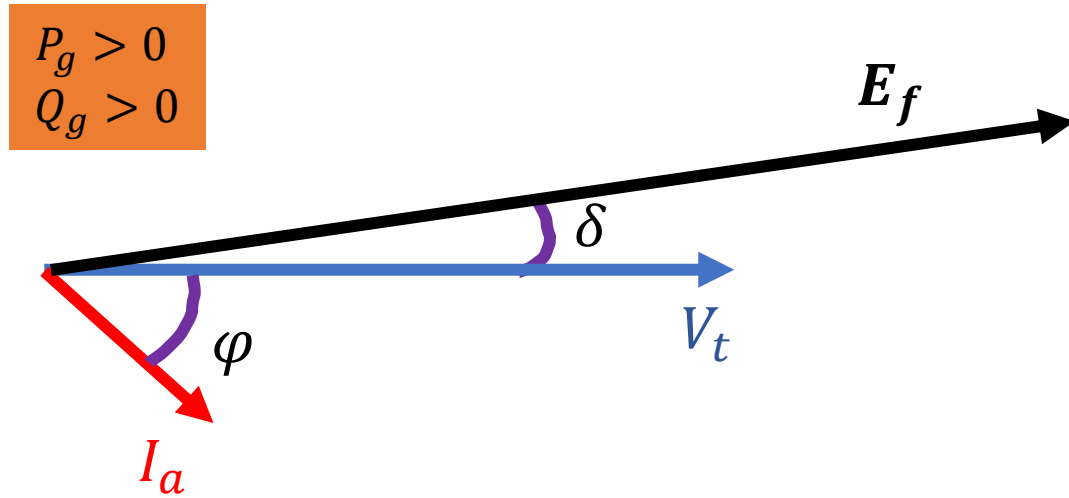


# Resumo

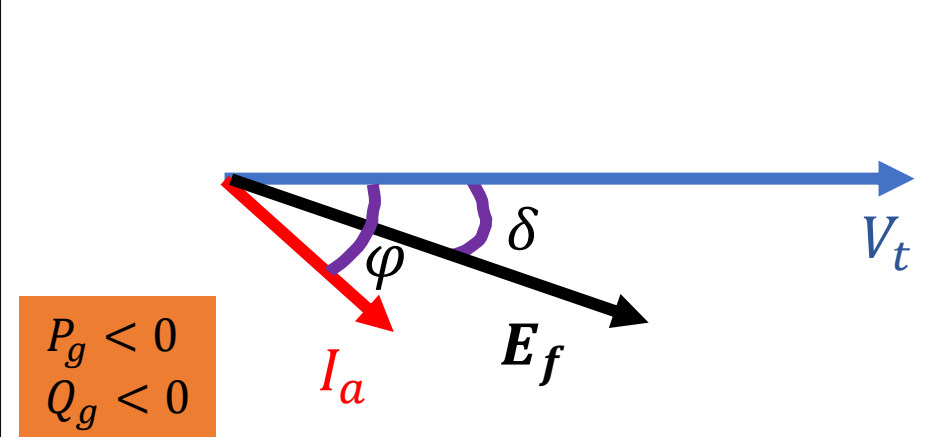
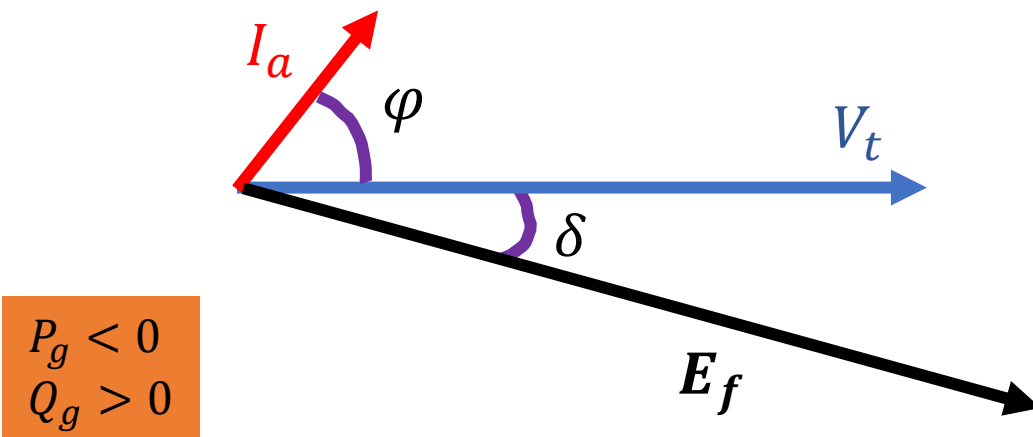
*Sobre – excitado*

*Sub – excitado*

GERADOR



MOTOR





# Obrigado pela Atenção



Bons estudos!



Dúvidas: [afcupertino@ieee.org](mailto:afcupertino@ieee.org)



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“GESEP UFV”

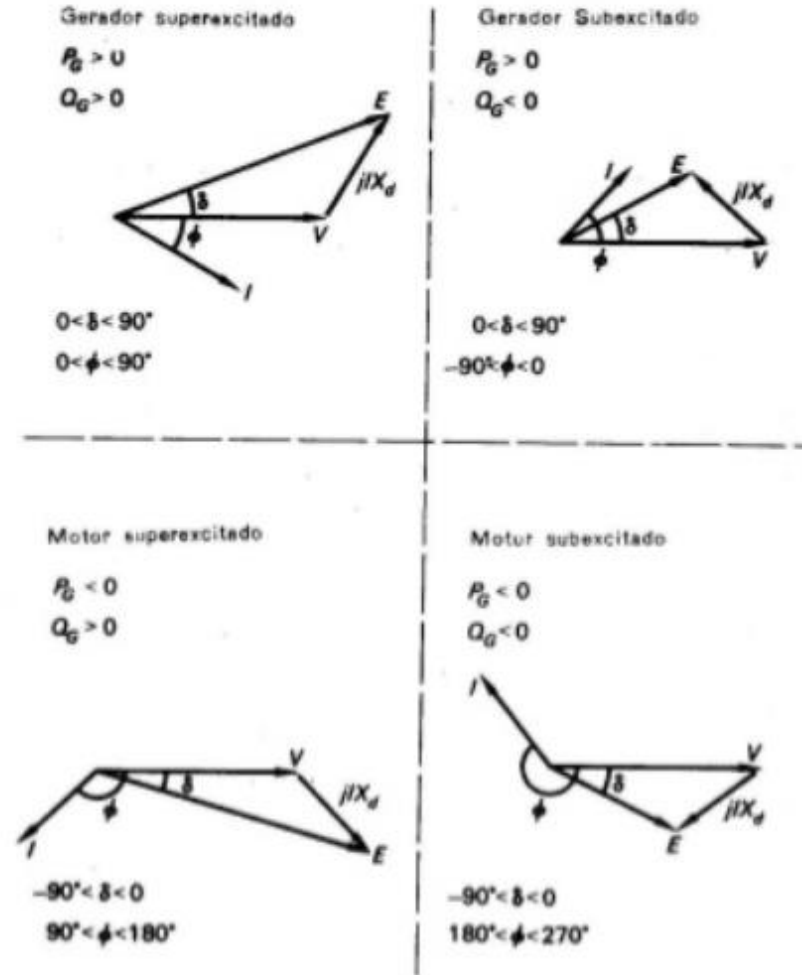


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“Estimate”

# Obrigado pela Atenção



Os quatro casos possíveis de funcionamento de uma máquina síncrona.