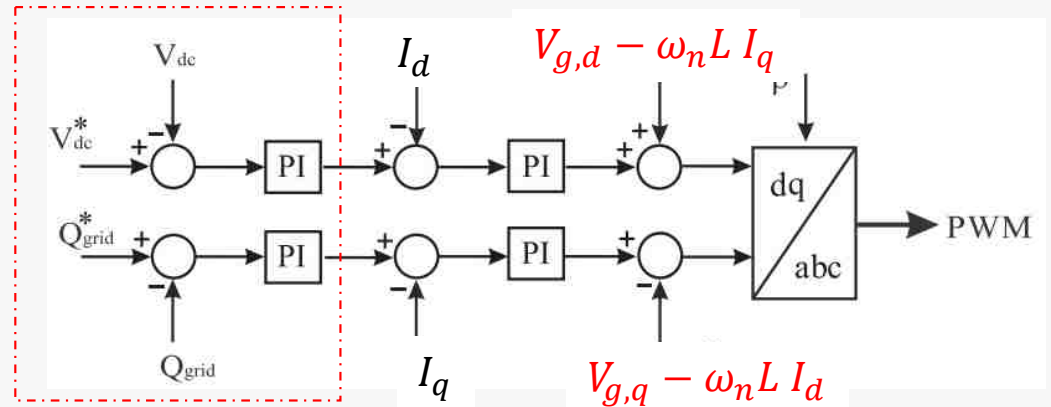
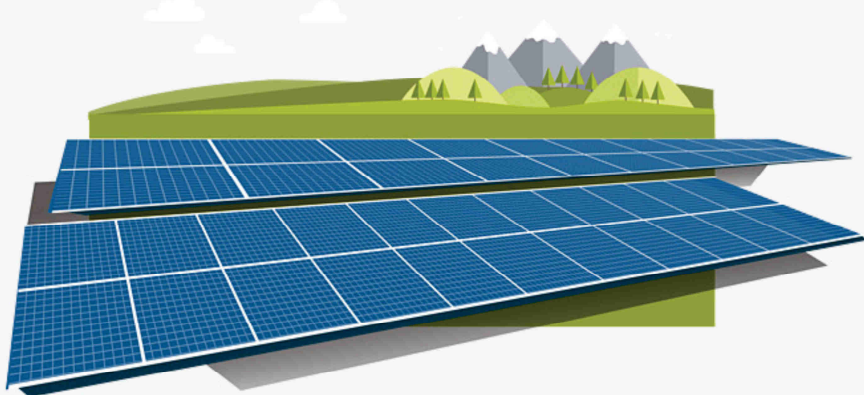


Modelagem e Controle de Sistemas Fotovoltaicos

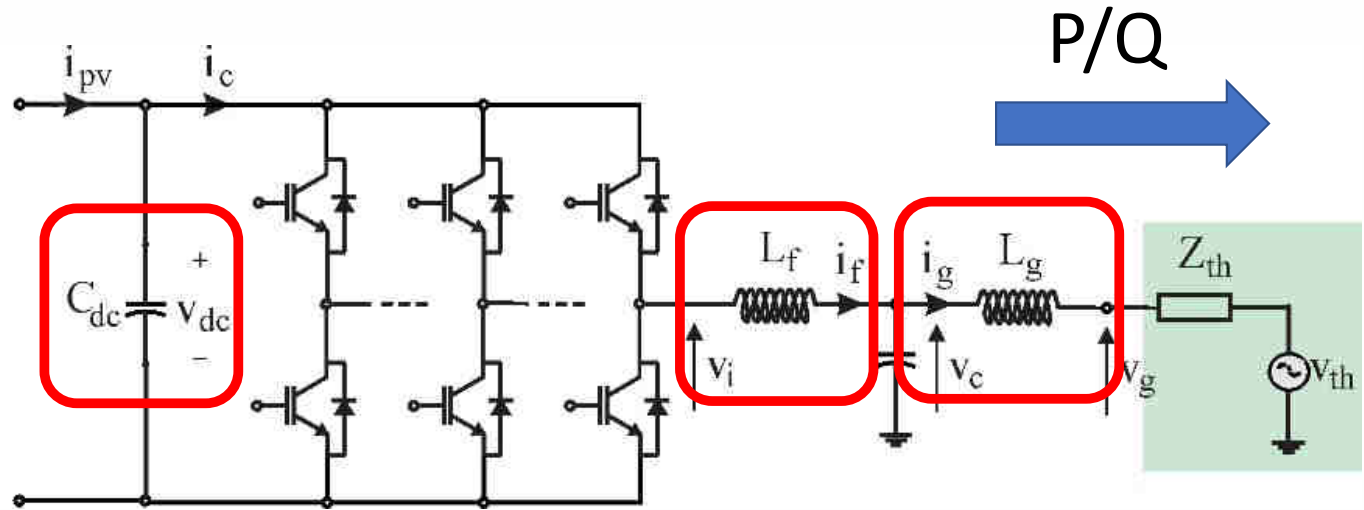
Aula 08 – P2: Controle do Inversor Fotovoltaico: Malhas Externas – Tensão no Barramento e Pot. Reativa

Prof. Heverton Augusto Pereira

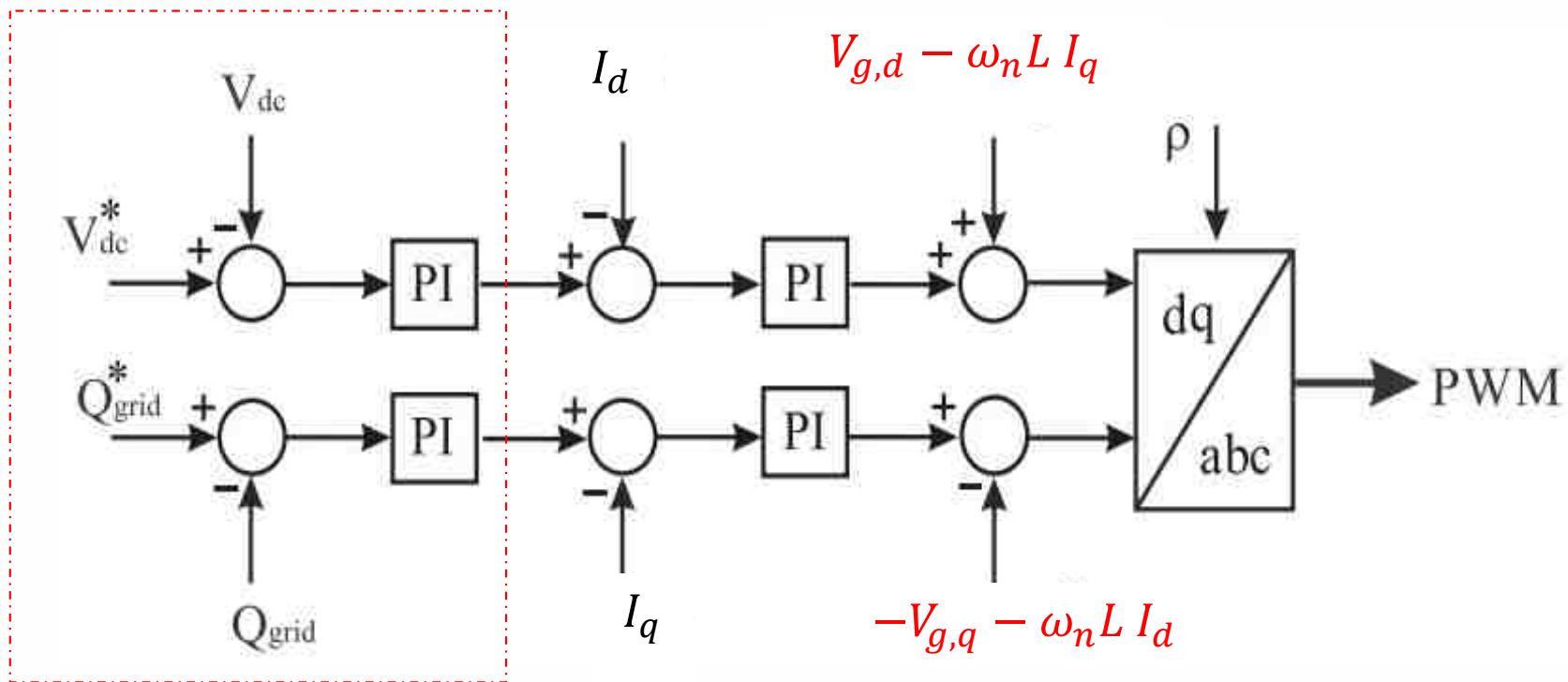
heverton.pereira@ufv.br



O que eu posso controlar?



Controle do conversor trifásico: Malha externa

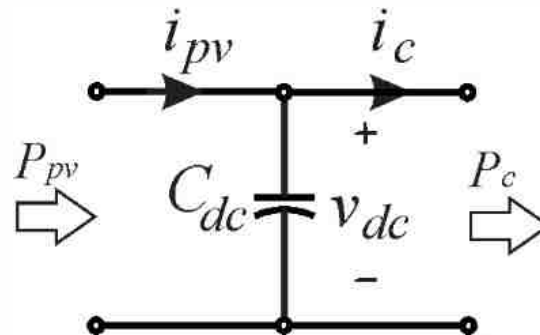


Controle do conversor trifásico: Malha externa

- ✓ Considerando as perdas no conversor desprezíveis:

$$v_{dc} i_c = \frac{3}{2} v_{g,d} i_{d,g}$$

$$i_c = \frac{3}{2} \frac{v_{g,d}}{v_{dc}} i_{d,g}$$



Controle do conversor trifásico: Malha externa

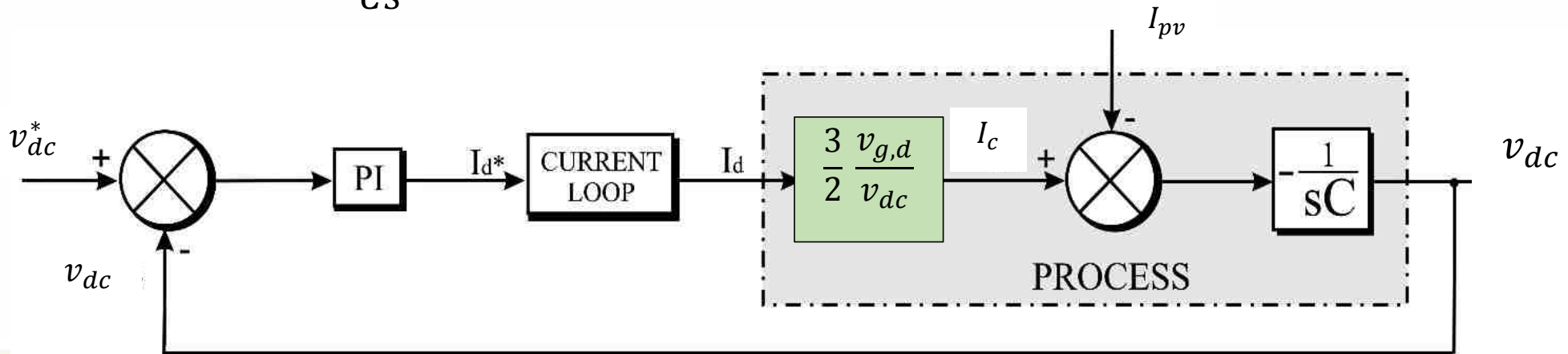
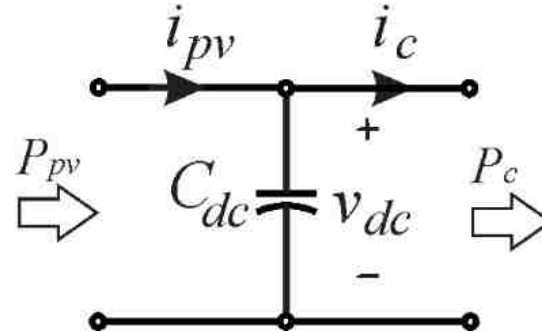
✓ Controle do barramento cc:

$$C \frac{dv_{dc}}{dt} = i_{pv} - i_c$$

$$CsV_{dc}(s) = I_{pv}(s) - I_c(s)$$

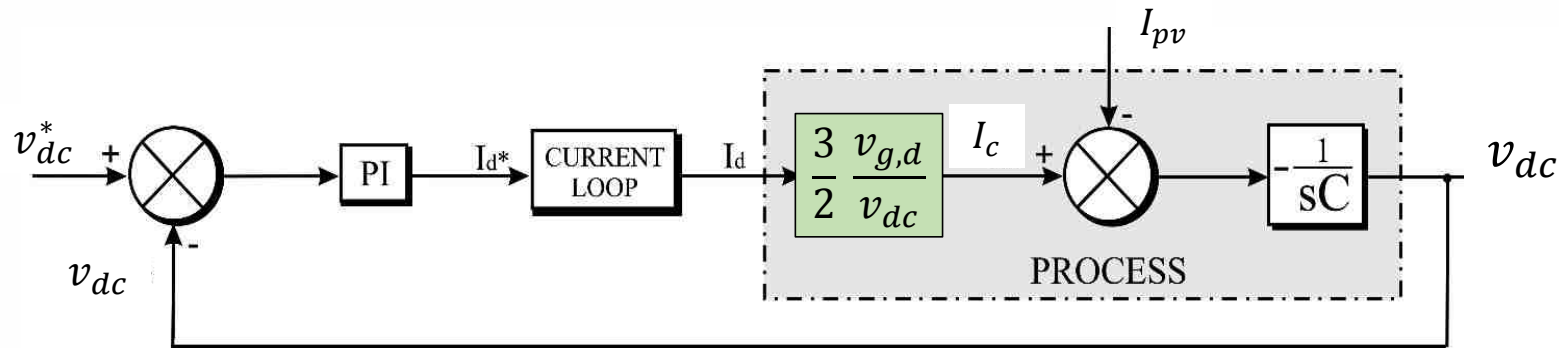
$$V_{dc}(s) = \frac{I_{pv}(s) - I_c(s)}{Cs}$$

$$i_c = \frac{3}{2} \frac{v_{g,d}}{v_{dc}} i_{d,g}$$



Controle do conversor trifásico: Malha externa

- ✓ Controle do barramento cc:



$$k_{p,dc} = \frac{2\pi}{G} (f_{c1,dc} + f_{c2,dc}) C$$

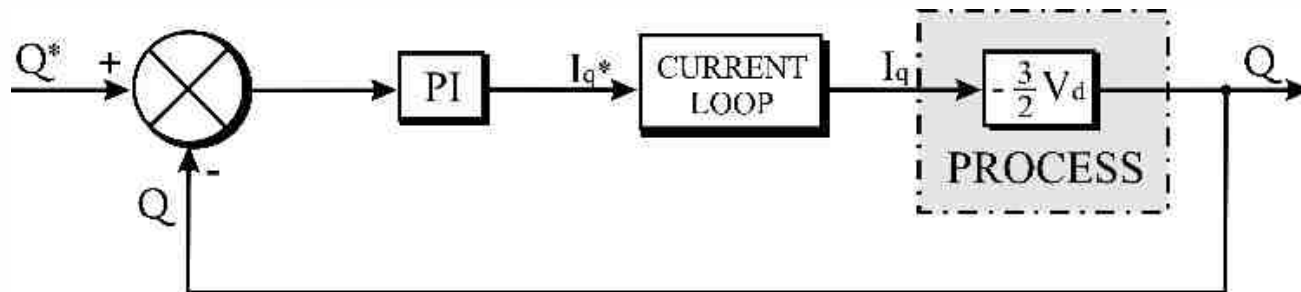
$$K_{i,dc} = \frac{4\pi^2}{G} f_{c1,dc} f_{c2,dc} C$$

$$G = \frac{3}{2} \frac{v_{d,g}}{v_{dc}^*}$$

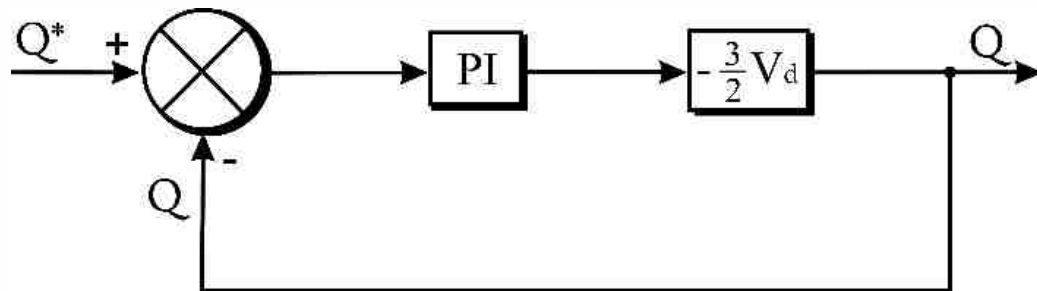
Controle do conversor trifásico: Malha externa

✓ Controle da potência reativa:

$$Q = -\frac{3}{2} v_{gd} i_{g,q}$$



✓ Desprezando a dinâmica da malha interna

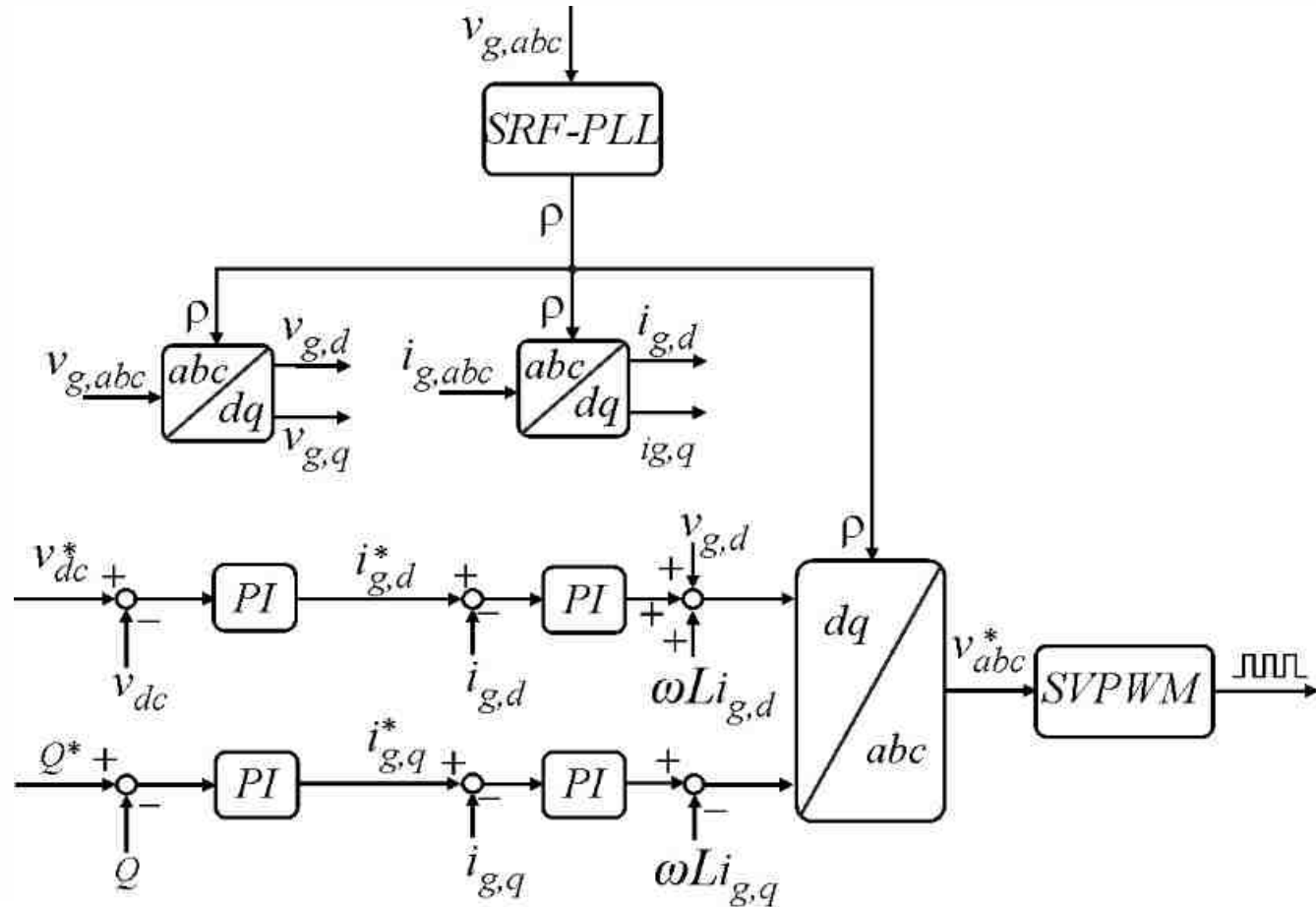


$$k_{p,Q} = \frac{2 \pi f_{c2,Q}}{2 \pi H (f_{c1,Q} - f_{c2,Q})}$$

$$k_{i,Q} = 2 \pi f_{c1,Q} K_p$$

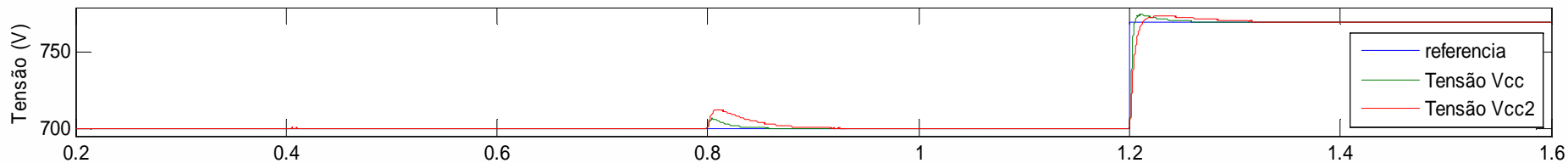
$$H = -\frac{3}{2} v_{g,d}$$

Controle do conversor trifásico: Malha externa

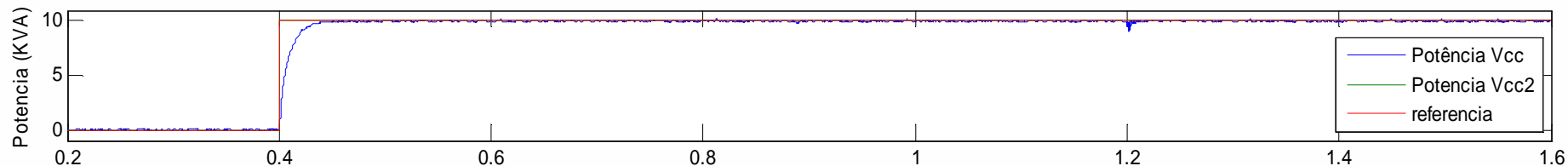


Controle do conversor trifásico: Malha externa

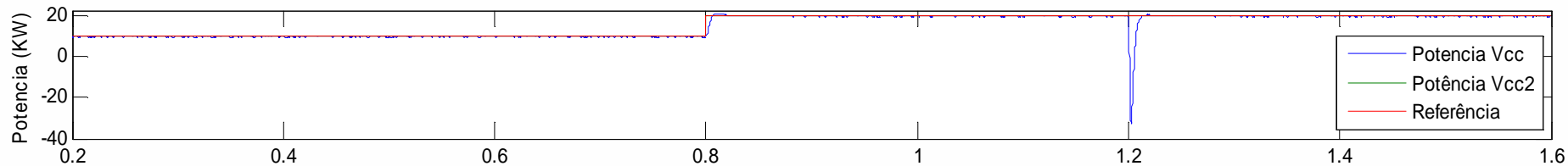
Tensão Barramento CC



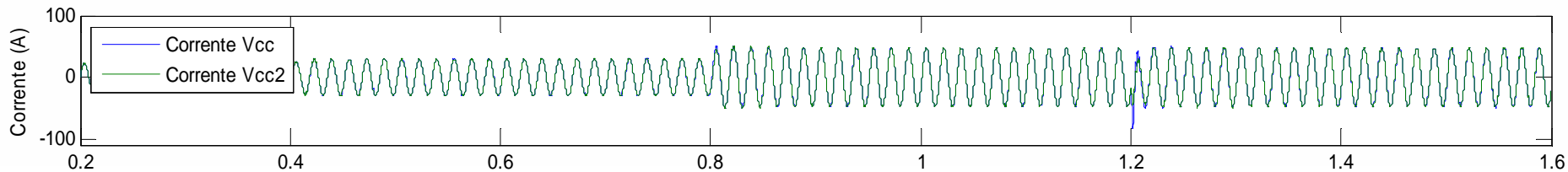
Potencia Reativa



Potencia Ativa



Corrente Rede Fase A



Tempo (s)



www.gesep.ufv.br



Gesep



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Gesep UFV



Estimate - Sistemas
Fotovoltaicos



<https://play.google.com/store/apps/details?id=br.developer.gesep.estimate>



Obrigado!

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