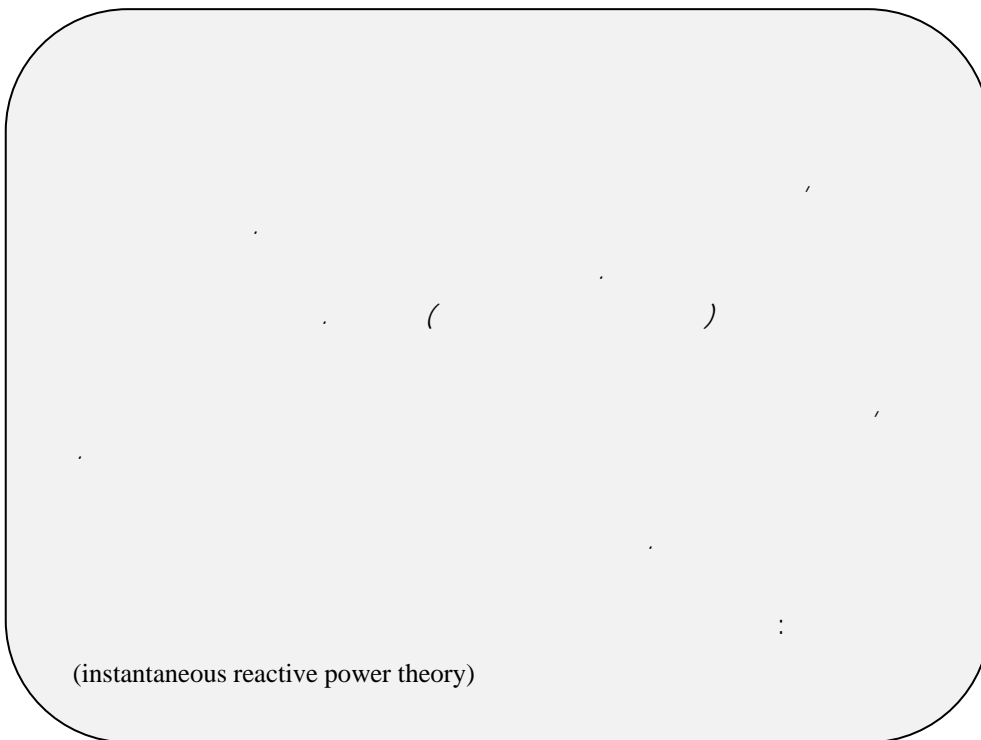


FACTS



DC/DC

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. ([] [])

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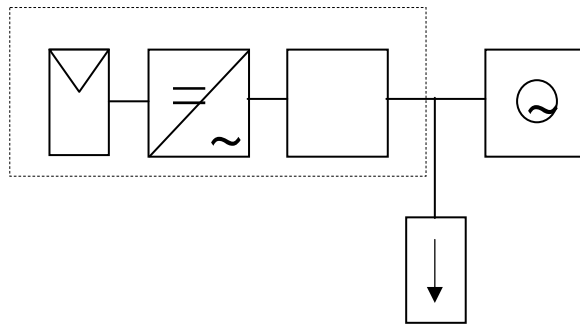
. [] []

(active filter)

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(U.P.S.)



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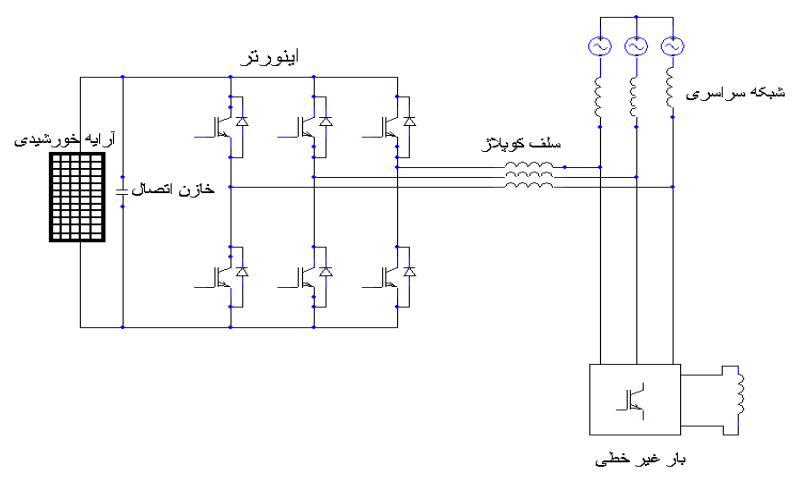
(Voltage Source Inverter :VSI)

VSI

VSI

[]

dc



ac

VSI

).

(VSI)

(.

VSI

()

VSI

VSI

v_c, v_b, v_a

[] .
[] .

VSI

dc

[]

Akagi

$\alpha\beta$

$$\begin{bmatrix} V_\alpha \\ V_\beta \end{bmatrix} = [A] \begin{bmatrix} V_a \\ V_b \\ V_c \end{bmatrix}, \quad \begin{bmatrix} i_\alpha \\ i_\beta \end{bmatrix} = [A] \begin{bmatrix} i_a \\ i_b \\ i_c \end{bmatrix} \quad (1)$$

$$[A] = \sqrt{\frac{2}{3}} \begin{bmatrix} 1 & -1/2 & -1/2 \\ 0 & \sqrt{3}/2 & -\sqrt{3}/2 \end{bmatrix} \quad (2)$$

$$v_a + v_b + v_c = 0$$

$$p(t) = v_\alpha(t)i_\alpha(t) + v_\beta(t)i_\beta(t) \quad (3)$$

$$q(t) = -v_\alpha(t)i_\beta(t) + v_\beta(t)i_\alpha(t) \quad (4)$$

$$\begin{bmatrix} i_\alpha \\ i_\beta \end{bmatrix} = \frac{1}{v_\alpha^2 + v_\beta^2} \begin{bmatrix} v_\alpha & v_\beta \\ v_\beta & -v_\alpha \end{bmatrix} \begin{bmatrix} p \\ q \end{bmatrix} \quad (1)$$

$$\bar{p} = \bar{p} + \tilde{p} \quad (2)$$

$$q = \bar{q} + \tilde{q} \quad (3)$$

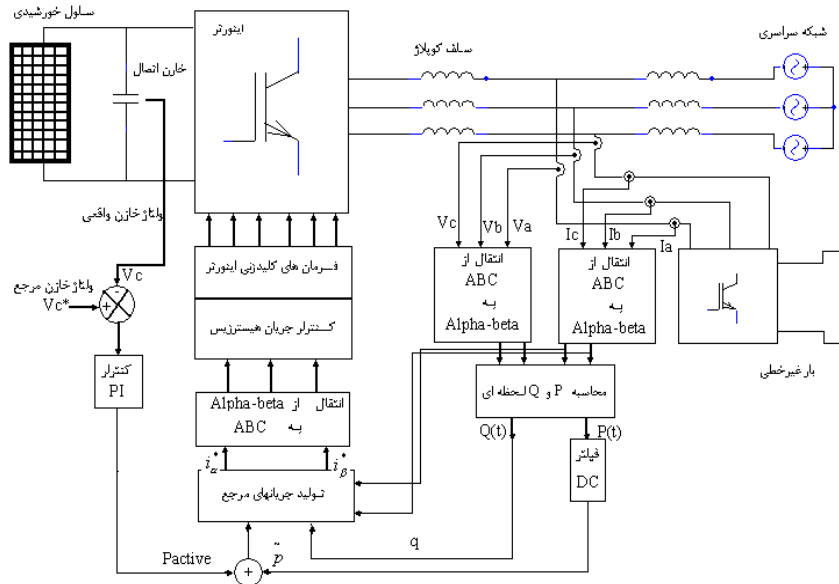
p	dc	\bar{p}
p	ac	\tilde{p}
q	dc	\bar{q}
q	ac	\tilde{q}

\bar{q} \tilde{p}

VSI

$$\int_{-\infty}^t (V_c i_{pv} - P_{active}) d\lambda = \frac{1}{2} C V_c^2 \quad (4)$$

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$$P_{active} = K_p (V_c^* - V_c) + K_I \int (V_c^* - V_c) dt \quad (1)$$

$$\alpha\beta \quad (2)$$

$$\begin{bmatrix} i_\alpha^* \\ i_\beta^* \end{bmatrix} = \frac{1}{V_\alpha^2 + V_\beta^2} \begin{bmatrix} V_\alpha & V_\beta \\ V_\beta & -V_\alpha \end{bmatrix} \begin{bmatrix} \tilde{p}_L + P_{active} \\ -\tilde{q}_L + \tilde{q}_L \end{bmatrix} \quad (3)$$

dc

$$\begin{matrix} i_\beta^* & i_\alpha^* & \alpha\beta \\ P_{active} & \alpha\beta & \\ : & abc & \end{matrix} \quad \begin{matrix} V_\beta & V_\alpha \\ q_L & P_L & \alpha\beta \end{matrix}$$

$$\begin{bmatrix} i_a^* \\ i_b^* \\ i_c^* \end{bmatrix} = \sqrt{\frac{2}{3}} \begin{bmatrix} 1 & 0 \\ -1/2 & \sqrt{3}/2 \\ -1/2 & -\sqrt{3}/2 \end{bmatrix} \begin{bmatrix} i_\alpha^* \\ i_\beta^* \\ dc \end{bmatrix} \quad ()$$

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MATLAB

:

:

1mF

:

dc

RL

10KHz

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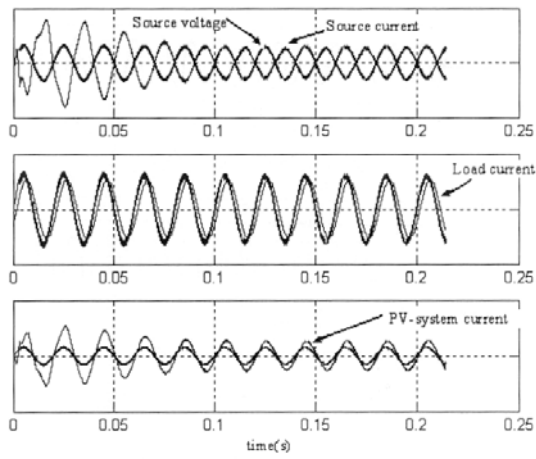
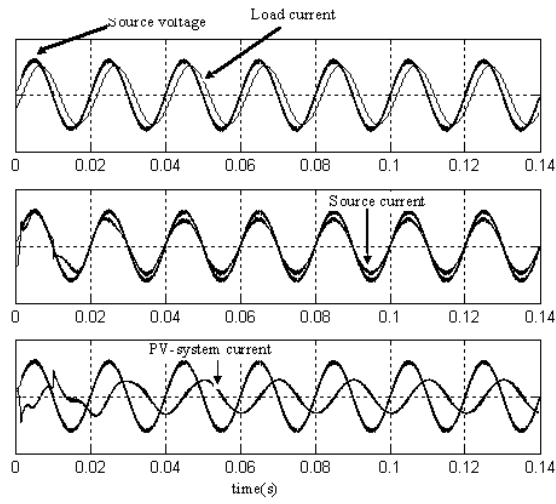
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(Active Filter)

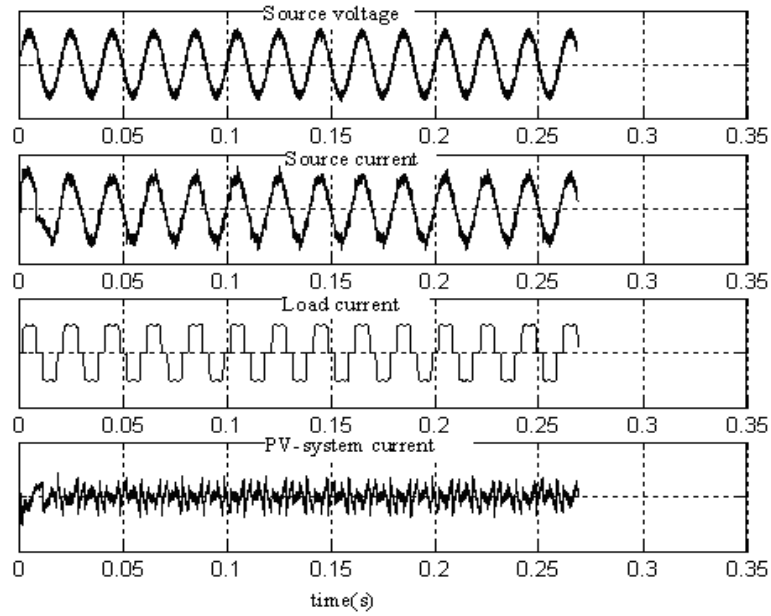
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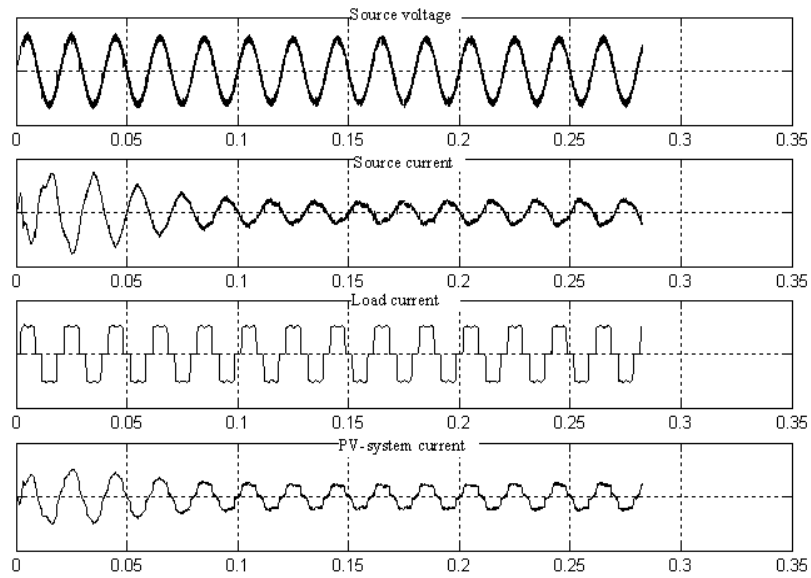
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