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2008 : December 2008 - Fast Breaking Papers : Gerardo Escobar Valderrama

FAST BREAKING PAPERS - 2008

December 2008

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Gerardo Escobar Valderrama talks with *ScienceWatch.com* and answers a few questions about this month's Fast Breaking Paper in the field of Engineering. The author has also sent along images of their work.

Article Title: Repetitive. based controller for a UPS inverter to compensate unbalance and harmonic distortion
Authors: Escobar, G;Valdez, AA;Leyva-Ramos, J;Mattavelli, P
Journal: IEEE TRANS IND ELECTRON
Volume: 54
Issue: 1
Page: 504-510
Year: FEB 2007
* IPICYT, Div Appl Math, San Luis Potosi 78216, Mexico.
* Univ Udine, DIEGM, I-33100 Udine, Italy.
(addresses have been truncated)

SW: Why do you think your paper is highly cited?

Because this subject of uninterruptible power supply (UPS) inverters is quite popular at the moment and besides, there is a quite new viewpoint of the control of such a system that finally guarantees a neat response. The controller incorporates a repetitive-based scheme that solves the harmonic compensation problem in a simple and elegant way.

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

It describes a new methodology to control the UPS inverter, and also makes an interesting modification to the hardware in order to save current sensors. Of course, it also synthesizes several procedures from the theory of control.

SW: Would you summarize the significance of your paper in layman's terms?

It's a controller for the UPS inverter that guarantees a nice performance, in spite of distorting loads and a reduced number of sensors.

SW: How did you become involved in this research, and were there any problems along the way?

It was part of a project on the subject of UPS inverters. The big problem was the design of power elements and the tuning of all control parameters involved.
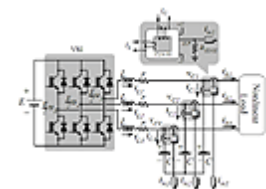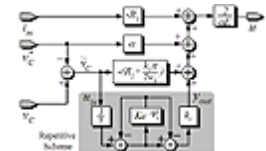
Figure 1:

Figure 2:
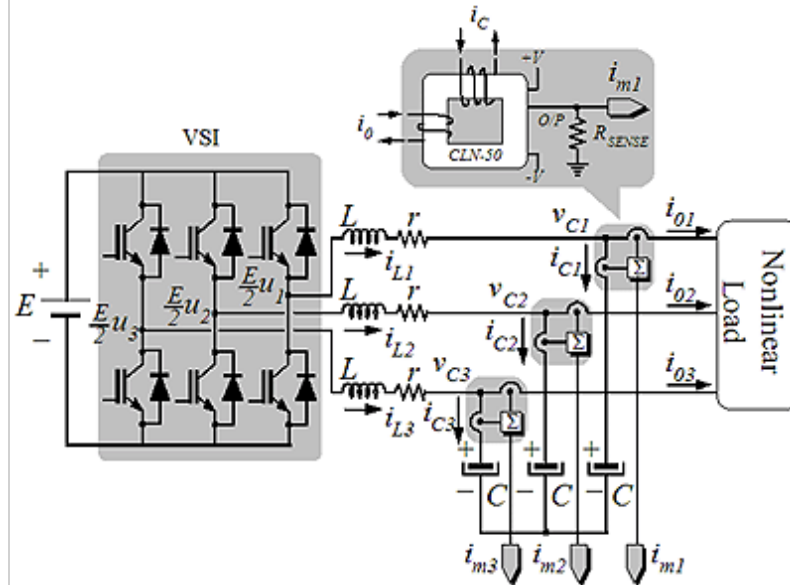

+ View larger images & details

Figure 1:

Figure 1: CIRCUIT

Three-phase three-wire UPS inverter system with a zoom of the combined current sensors used.
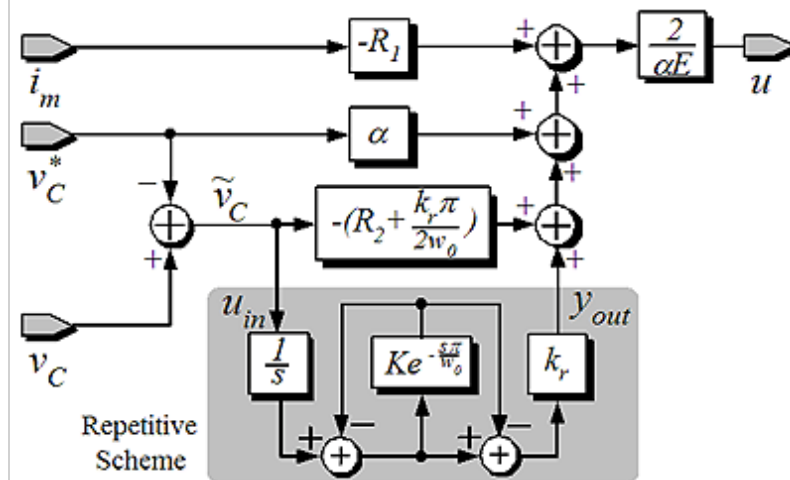
Figure 2:


Figure 2: CONTROLLER

Block diagram of the proposed controller, including a repetitive-based stage to compensate the harmonic distortion caused by the load.

Keywords: uninterruptible power supply inverters, harmonic compensation problem, design of power elements, tuning of all control parameters, highly distorting loads.

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