

Department of Electrical & Computer Engineering

**Florida International University**

College of Engineering & Computing



In Conjunction with the

Institute of Electrical and Electronics Engineers, Inc.

**Industry Applications Society**



## **Converter voltage vector computation for current control in three phase converters**

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**Time:** 11:00 AM

**Place:** ECE Department, FIU

10555 W. Flagler Street, Miami, Florida

Energy Systems Research Lab. (EC3960)

### **Abstract:**

Converter voltage vector computation for current control in three phase converters This work presents two current control techniques, for three phase voltage source converters (VSC) used as controlled rectifiers (CR) operating at unity power factor. The first one is based on choosing the best natural vector, among the natural space vectors produced by voltage source inverter, with the use of a cost function. The second one is based on computing and synthesizing a space vector such that an absolute minimum in the cost function is obtained. The first algorithm is a simple method that presents power factor correction and good total harmonic distortion compensation. The second algorithm provides a novel and closed form formula to calculate the optimum voltage vector applied by the converter. In this method pulse width modulation (PWM) is required to modulate the voltage vector that controls directly the line current to follow the current reference. The simulations and experimental results show the advantages of the proposed control algorithm.

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