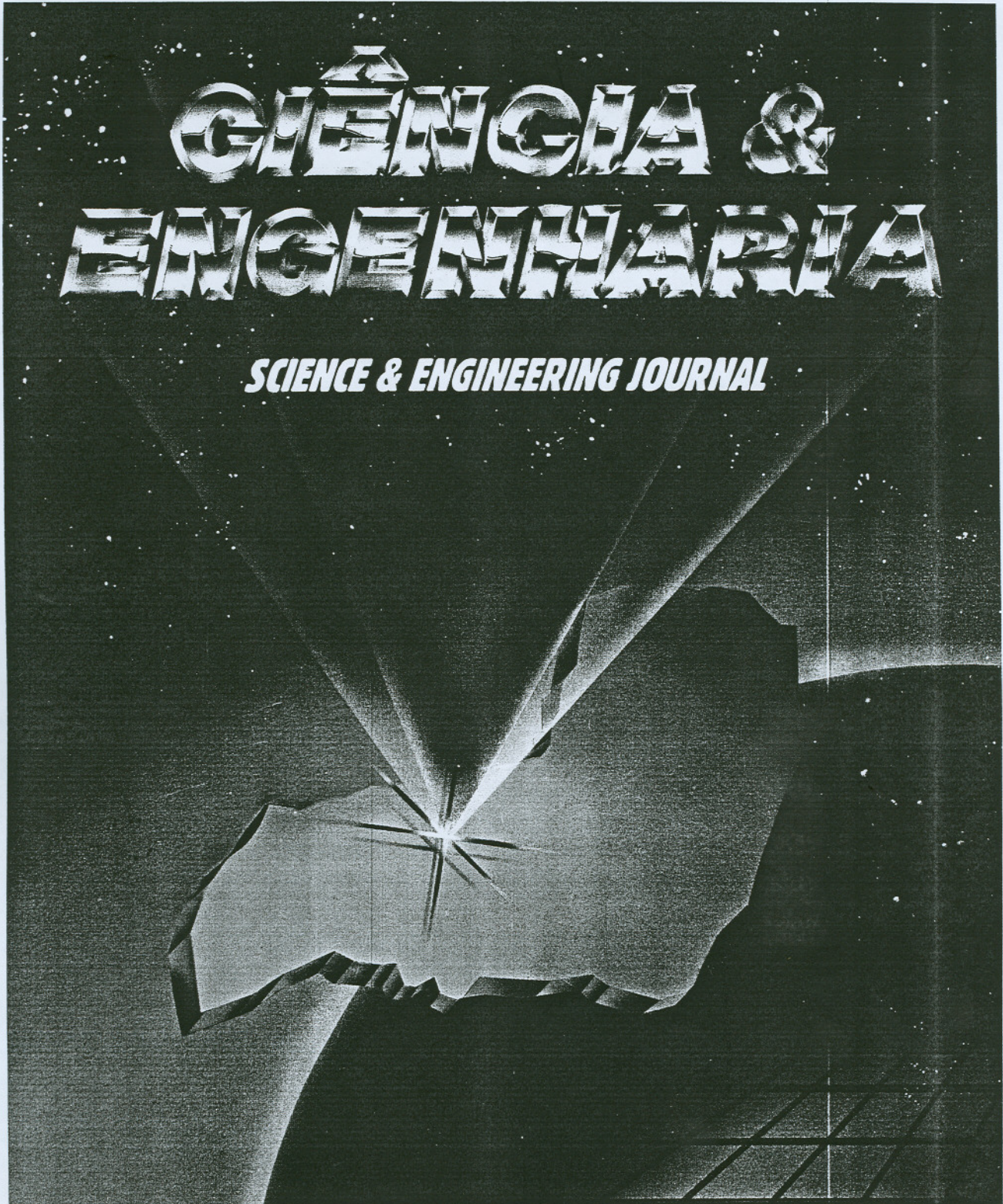


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ENERGY SA VING AND QUALITY IN DISTRIBUTION SYSTEMS FROM VOLT AND V AR SIMUL T ANEOUS CONTROL

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ABSTRACT

The main goal of this work is to minimize the Energy and Peak Power losses, so that the voltage is within a normal gap all the time by varying load state, and the capacitors nonlinear cost are taken into account. These bring up the necessity of simultaneous Volt's and Var's control. For this, the general matter of capacitive compensation in distribution guides to one realistic form, with lateral branches taken for a real physic modeling. By the analysis of compensation, an intrinsic couple situation of the reactive current flow and the voltage variations along the feeder all the time is regarded. The result of the analytic address gives a decoupled solution, which implicated into two problems: the capacitor one (Var compensation), concerning its locations, sizes, and control; and the regulator one (to provide smooth Voltage profile), concerning its locations and control. Then, a computational program systematization based in this approach is developed to solve the problem, through the division of that global problem into smaller problems. Once conquered those, better quality and bigger efficiency will be brought in the distribution system focusing Distribution Automation.

Key words: Var Control, Volt Control, Distribution System, Energy Saving, Capacitor, Efficiency.