13th INTERNATIONAL SYMPOSIUM on POWER ELECTRONICS - Ee 2005
XIII Međunarodni simpozijum Energetska elektronika – Ee 2005
NOVI SAD, SERBIA & MONTENEGRO, November 2nd - 4th, 2005

CURRENT CONTROLLED TRANSISTOR POWER CONVERTER FOR DRIVING ELECTROMAGNETIC VIBRATORY CONVEYOR

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Abstract: *Conveying drives with electromagnetic vibrators provides easy and simple control of the mass flow conveying materials. Generating free vibrations suitable power converter and adequate controller provides continuous flow of the material, under different conditions. This is possible due to vibrations of a variable intensity and frequency within wide range. Nowadays, thyristors and triacs are used for electromagnetic vibrators standard power output stage. Their usage implies a phase control. Varying firing angle provide the controlled AC or DC injection current to control mechanical oscillations amplitude, but not tuning of their frequency. Another way of producing a sine half wave is to use a switching transistor power converter. Only then, drive for electromagnetic vibrators do not depend on mains frequency. Frequency control provides operation of vibratory conveying drive in the region of the mechanical resonance. Resonance is highly efficient, because much output displacement is provided by little input power. A realization current controlled transistor power converter for driving resonant electromagnetic vibratory conveyor is presented in this paper.*

Key words: ***Electromagnetic vibratory actuator, resonance, current control, transistor power converter, vibratory conveyance***

STRUJNO KONTROLISANI TRANZISTORSKI PRETVARAČ ZA POBUDU ELEKTROMAGNETNIH VIBRACIONIHTRANSPORTERA

Sadržaj rada: *Elektromagnetni transportni pogoni obezbeđuju jednostavnu kontrolu gravimetrijskog protoka rasutih materijala. Ostvarivanjem slobodnih vibracija promenljivog intenziteta i učestanosti u širokom opsegu, posredstvom podesnog energetskog pretvarača i pripadajućeg kontrolera obezbeđen je kontinualan protok materijala pri različitim uslovima. Danas se kao standardni poluprovodnički izlazni stepeni snage koriste tiristori i trijaci, čija upotreba podrazumeva korišćenje fazne kontrole. Obzirom da je u tom slučaju, učestanost napojne mreže fiksna, promenom faznog ugla, moguće je postići podešavanje amplitude oscilacija transportera, ali ne i negove učestanosti. Tranzistorskim pretvaračima je pored amplitudske kontrole, obezbeđena i frekventna kontrola. Ovim je pobuda transportera nezavisna od mrežne učestanosti. Frekventna kontrola obezbeđuje rad vibracionih transportera u oblasti mehaničke rezonance. Rad u rezonantnom opsegu je energetski povoljan, pošto se tada ima minimalna potrošnja energije iz mreže.U radu je predstavljen jedan konkretno realizovan, strujno kontrolisan tranzistorski pretvarač za pobudu elektromagnetnih rezonantnih vibracionih transportera.*

Ključne reči : ***Elektromagnetni vibracioni aktuator, rezonanca, strujna kontrola, tranzistorski pretvarač, vibracioni transport***