

Introduction

In this edition we would like to give our thanks once again to professor Chalmers for his excellent article "Field weakening in brushless p-m motors". We would also like to thank Infranor GMBH for providing us with an example of a Mavilor application for the Rieter Company, a leader in the textile industry field.

We also include an article for our readers of our recent participation in the International Factory and Instrument Exhibition in China, the event was a resounding success resulting in more than 100 contacts.

We would like to remind our readers of the open character of our publication, that serves as a platform for dialogue within the entire Mavilor family - so that clients and collaborators throughout Mavilor's extended network can express their opinions and commentaries on any aspect related to Mavilor's products and its applications, as well as the company culture in all of its aspects.

Therefore, we invite you to send us texts or other material that can be communicated to all of our publication's readers.

Thank you very much, Mavilor Team

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MAVILOR MOTORS, S.A.
Pol. Ind. URVASA - C/. Empordà, 11-13
08130 Sta. Perpètua de Mogoda
(Barcelona) SPAIN
Tel. +34 935 743 690 - Fax. +34 935 743 570
E-mail: mavilor@mavilor.es
<http://www.mavilor.es>

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Field weakening in brushless p-m motors

Brian J. Chalmers

University of Manchester Institute of Science and Technology
Manchester, UK

Introduction

Field weakening is commonly used in separately-excited dc motors in order to obtain speed increase with falling torque. Thus, with armature voltage V , armature current I and armature resistance R , the armature emf E is given by the equation

$$V = E + IR$$

To identify the performance capability envelope, V is taken as the maximum available supply voltage and I is the maximum continuous current capacity. The equation shows that, under these conditions, the emf E must be constant. The effect of reducing the field flux F is then given by the emf equation

$$E = kFW$$

whence

$$W = E/kF$$

and it is seen that, with constant E , speed W increases in inverse proportion to the reducing flux. Furthermore, torque T is given by

$$T = kFI$$

So torque falls in direct proportion to the flux F . Mechanical power output P is

$$P = TW = (kFI)(E/kF) = EI$$

which is a constant. That is, for a conventional dc motor, a constant power capability is obtained in the field weakening mode.

By analogy with dc motors, the term 'field weakening' is also applied to brushless p-m motors but the mechanism and technology are quite different and it does not follow that constant power capability will automatically be obtained.

Field weakening in brushless p-m motors

A brushless p-m motor is, in essence, an inverter-fed ac synchronous motor with a p-m excited rotor. Accordingly, the variable-frequency supply to the stator is the only excitation which is available to be controlled. Field weakening is obtained by electronically advancing the phase of the stator currents to produce a demagnetizing component of stator magnetomotive force which opposes the rotor magnet flux, thus reducing the net effective flux.

MAVILOR in the International Factory & Instrument Exhibition in China.

15 days in China.

In the Year of the Monkey, we have traveled again to China; Zhong Guò hen ta (China is very big).

The numbers here are different from those in our western world. The ten thousand has its own nomenclature (wàn), like the lakh in India, or the Kroe instead of one million. One of the most confusing things, though, is the companies' registration forms. I mean, from de S. A. de C. V. in Mexico to a Sdn. Bhd. in Malaysia, including the S. A. in Europe, or the GmbH, and the Pvt. companies in India, we are used to specific forms



according to the country. In China it might not work like that. point of view is that the human touch still matters more than the company's name. You can change your name from one day to another; there are plenty of names still available for new companies. Possibly building a brand still means very little, compared to establishing a nice guang xi (good relationship). The tempo inside the companies is like piccicato polka compared with what we are used to, but how to measure what is fast and what is not in a country where the train from Shanghai's International Airport to the Pudong district runs at 430 km/h?



EXPRESS

MAVILOR



APPLICATIONS

INFRANOR GmbH RIETER

Germany





Client: RIETER AG
Branche: Textile
Components: BT-115, user-specific MSD1
Application: Drawframe; high dynamic AC-Servodrive for levelling slivers
Reason to join Infranor:

- * customized solution
- * high flexibility
- * superior support and service

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AUSTRIA: REINHOLD SPÖRK ANTRIEBSYSTEME

+61 733974575

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+61 733974575

BRAZIL: PRODAU IND COM AUTOMAÇÃO LTD

+55 152283730

CHILE: LUREYE ELECTROMECAÁNICA SA

+56 24504200

REP. OF CHINA: GUANGZHOU JEEWELL COMMUNICATIONS

SCIENCE & TECHNOLOGY Co.,Ltd

+86 2087591568

CZECH REPUBLIC: ESI-D SRO

+42 0261123345

DENMARK: DELTA ELEKTRONIK A/S

+45 43718088

FRANCE: INFRANOR SA

+33 (0) 169633515

GERMANY: INFRANOR GmbH

+49 6181180120

GREECE: KYMA GmbH

+30 310556239

HUNGARY: SYNCRODAN KFT.

+36 12650677

INDIA: PERFECT MACHINE TOOLS Co.Ltd.

+91 222872211

IRAN: SUPER ELECTRIC Co.

+98 213930203

ISRAEL: ABIRY TECHNOLOGIES LTD

+972 36470471

ITALY: ELCAM SISTEMI SRL

+39 (0) 266200980

JAPAN: KANOSHOJI Co. Ltd.

+81 352982700

KOREA: KYUNG HEE TRADING Co. Ltd.

+82 (02) 7852262

MALAYSIA: SOUTH PACIFIC RADIO Co. SDN BHD

+60 52538555

MEXICO: CONTROLES INDUSTRIALES Y

MANUFACTURAS SA DE CV (CIMSA)

+52 555696-3932

NETHERLANDS: INFRANOR SA

+31 186610155

NORWAY:FERMAR ASSOCIATES

+47 22335301

RUSSIA: MAY ELECTRONICS COMPONENTS

+7 (095) 9135161

SOUTH AFRICA: BIRCRAFT MOTION & AUTOMATION

COMPONENTS

+27 (11) 4681881

SPAIN: INFRANOR SA

+34 934601631

SWEDEN: SIDE SUPPORT

+46 2124860

SWITZERLAND: INFRANOR SA

+41 (0) 227763624

TAIWAN: EU-POR LTD.

+886 229145767

TURKEY: DAYE MACHINE

+90 2166416884/6886

UNITED KINGDOM: INFRANOR LTD.

+44 1522699500

UNITED STATES: INFRANOR INC.

+1 2037298258