

DOI: <https://doi.org/10.15407/techned2020.01.040>

## ROTOR STRUCTURE WITH DOUBLE CAGE FOR IMPROVED SYNCHRONOUS CAPABILITY OF LINE-START PERMANENT MAGNET SYNCHRONOUS MOTORS

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	No 1, 2020 (January/February)
Pages	40 - 47

### Authors

**Hongbo Qiu, Yong Zhang, Cunxiang Yang, Ran Yi**

School of Electrical and Information Engineering, Zhengzhou University of Light Industry,  
Dongfeng Road No. 5, 450002, Zhengzhou, China,  
e-mail: zhangxiaoyong1989@gmail.com

### Abstract

*Line start permanent magnet synchronous motors (LSPMSMs) have a problem of synchronization. In this paper the rotor of LSPMSM with double cage is proposed to improve synchronous capability of the motor. Key factors concerning the starting performance and synchronous capability of LSPMSM are given, and the conflict relationship between starting performance and synchronous capability is analyzed. The performances of starting and synchronization of the motors with single cage rotor and double cage rotor are compared and analyzed based on the conflict. The results obtained for the motor with double cage rotor can improve the synchronous capability within the wide range. The principal results of the paper provide the reliable theoretical propositions for improving LSPMSM performance. References 15, figures 11, tables 3.*

**Key words:** LSPMSM, finite-element method, double cage rotor, starting performance, synchronous capability.

Received: 31.07.2019  
Accepted: 27.11.2019  
Published: 16.01.2020

Acknowledgement. This work was supported in part by the National Natural Science Foundation of China under Grant 51507156, in part by the University Key Scientific Research Programs of Henan province under Grant 17A470005, in part by the Key R & D and Promotion Projects of Henan Province under Grant 182102310033, in part by the Doctoral Program of Zhengzhou University of Light Industry under Grant 2014BSJJ042, and in part by the Foundation for Key Teacher of Zhengzhou University of Light Industry.

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