MT 26
International Conference on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: **1264** Type: **Poster Presentation**

Wed-Mo-Po3.13-05 [113]: Study on The Novel Design Process of Working Bar of Double Cage Induction Motor

Wednesday, 25 September 2019 09:30 (1h 45m)

A policy that mandates the use of high-efficiency devices in order to use energy resources reasonably is being implemented. Induction motors are the most commonly used energy consuming equipment and are highly effective in high efficiency design. For the design of high efficient induction motor. satisfying the high starting torque, the double bar type bar type rotor was designed. In the case of the working Bar of the double cage bar, most of the cases use an experience constant. However, these cases are applied to high voltage and large capacity induction motors (over 100kW), In case of medium and low capacity induction motors, errors are generated, resulting in lower results than the actual efficiency. In this paper, a new design process for the rotor's working bar of a double cage induction motor for high efficiency induction motor design is proposed. First, set the target value of working bar current density(WBCD) and rotor teeth magnetic flux density(RTMFD), and then calculate the current and area of working bar through resistance. Using this, WBCD is calculated and experience constant are changed and recalculated until WBCD is converged to the target value. When the area of working bar is determined, the height is divided by 1/2, and the width of working bar for each height is parametrized. When the RTMFD converges to the target value, the efficiency is calculated by implementing the performance evaluation. If the target efficiency is not satisfied, WBCD and RTMFD is revised and recalculated until the target efficiency is satisfied. Based on a model of 15 kw-class induction motor, the finite element analysis(FEA) results of the design model using the existing experience constant and the proposed design process were compared. Finally, the validity of the process is verified by prototype performance test.

Primary author: Mr KIM, Dong-Ho (Gachon University)

Co-authors: Prof. KIM, Kwang Soo (Halla University); Prof. LEE, Sung Gu (Busan University of Foreign Studies); Dr CHO, Suyeon (KATECH); Mr YANG, In-Jun (Gachon University); Mr SONG, Si-Woo (Gachon University); Prof. KIM, Won-Ho (Gachon University)

Presenter: Mr KIM, Dong-Ho (Gachon University)

Session Classification: Wed-Mo-Po3.13 - Motors X