

- [14]. S. M. Hwang *et. al.*, “Various Design Techniques to Reduce Cogging Torque by Controlling Energy Variations in Permanent Magnet Motors,” *IEEE Trans. Magn.*, Vol. 37, No. 4, pp. 2806-2809, July 2001.
- [15]. Q. He, and X. Bao, “Reducing Cogging Torque in Permanent Magnet Synchronous Motors by Auxiliary Teeth Method,” in *ICIEA Conference*, Oct. 2016.
- [16]. Sato, J. S. Shin, T. Koseki, and Y. Aoyama, “Basic Experiments for High Torque, Low Speed Permanent Magnet Synchronous Motor and a Technique for Reducing Cogging Torque,” in *ICEM*, Sept. 2010.
- [17]. Manninen, “Evaluation of the Affects of Design Choices on Surface Mounted Permanent Magnet Machines Using an Analytical Dimensioning Tool,” Master Thesis, Aalto University, Espoo, 2012.
- [18]. J. Pyrhonen, T. Jokinen, V. Hrabovcova, “Design of Rotating Electrical Machines,” Wiley, Second Edition, 2014.
- [19]. Boldea, S. Nasar, “The Induction Machines Design Handbook,” Boca Raton, FL, USA: CRC Press, 2010.
- [20]. S. Chacko, Ch. N. Bhende, Sh. Jain, and R. K. Nema, “Rotor Resistance Estimation of Vector Controlled Induction Motor Drive Using GA/PSO tuned Fuzzy Controller,” *International Journal on Electrical Engineering and Informatics*, Vol. 8, No. 1, pp. 218-236, Mar. 2016.
- [21]. R. Krishnan, “Permanent Magnet Synchronous and Brushless DC Motor Drives,” Boca Raton, USA: CRC Press, 2010.



Ali Izanlo was born in Shirvan, Iran, in 1990. He received his BSc degree in electrical engineering from Birjand University, Birjand, Iran in 2009. He received his MSc degree from Noshivani University of Technology in Mazandaran, Iran. His current research interests include variable and adjustable speed power generation with permanent magnet and doubly fed induction generators, automotive power electronics and drives, and current measurement systems for power electronics.



S. Asghar Gholamian was born in Babolsar, Iran, in 1976. He received his BSc degree in electrical engineering from K.N. Toosi University of Technology, Tehran, Iran in 1999 and his MSc degree in electric power engineering from the University of Mazandaran, Babol, Iran in 2001. He also received his PhD in electrical engineering from K.N. Toosi University of Technology, Tehran, Iran in 2008. He is currently Assistant Professor in the Department of Electrical Engineering at the Babol University of Technology, Iran. His research interests include power electronic and design, simulation,

modeling, and control of electrical machines.



S. Ehsan Abdollahi was born in Babol, Iran, in 1980. He received his BSc degree in electrical engineering from Amirkabir University, Tehran, Iran in 2002 and he received his MSc degree in electrical engineering from Iran University of Science & Technology, Tehran, Iran in 2005. He also received his PhD in electrical engineering from University of Tehran, Tehran, Iran. His research interests include electric machinery, motor control, power electronics, and renewable energy conversion.