

# Guest Editorial

## Optimal Design of Electric Machines

**E**LECTROMECHANICAL energy conversion is perhaps the one form of energy conversion that has been mastered by mankind in terms of efficiency, versatility, and integration. Advances in magnetic design, material science, control, and manufacturing over the past two centuries have contributed to the massive integration of these energy converters in almost every aspect of our modern life. Continued demand for the electrification of mechanical, hydraulic, and pneumatic apparatus over a wide range of industries brings new requirements in terms of ultra high efficiency, compactness, fault tolerance, durability, and low cost. Amid major breakthroughs and introduction of transformative inventions, optimal design and control of electromechanical converters continues to be far from exhausted. Researchers around world, in industry and academia, strive to meet the ever growing design specifications and requirements within geometrical, financial, and manufacturing limitations.

This special issue is put together with one aim in mind and that is to bring together the latest achievements, trends, and applications of optimal design in electric machines. Among the many quality submissions the editorial team has been able to select 13 articles which hopefully will help to achieve this goal. This special section covers advances in multi-objective design and optimization based on genetic algorithms, surrogate, polynomial regression, and particle swarm optimization techniques. Design of novel trans-rotary magnetic gear, hybrid machines for dc generation, and two degrees of freedom split-stator induction machines highlight new magnetic configurations and their performance evaluations. Multiphysics analysis of magnetothermal and magnetostructural behavior of Switched Reluctance Machine (SRM) and brushless doubly fed machines shed light on analytical and practical aspects of design in electromechanical converters. Finally, control of torque undulation, loss minimization, low speed high torque operation, and advanced digital control of adjustable speed motor drives conclude this unique collection of papers.

We hope that our readers will find this special section useful and would take advantage of this collection of timely, practical, and transformative contributions.

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