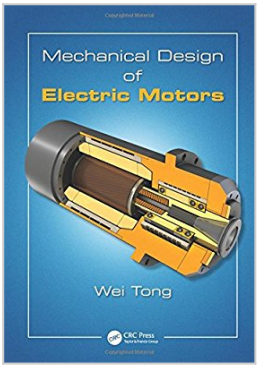

Mechanical Design of Electric Motors

By Wei Tong

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Rapid increases in energy consumption and emphasis on environmental protection have posed challenges for the motor industry, as has the design and manufacture of highly efficient, reliable, cost-effective, energy-saving, quiet, precisely controlled, and long-lasting electric motors.

Suitable for motor designers, engineers, and manufacturers, as well as maintenance personnel, undergraduate and graduate students, and academic researchers, **Mechanical Design of Electric Motors** provides in-depth knowledge of state-of-the-art design methods and developments of electric motors. From motor classification, design of motor components, model setup, and material and bearing selections to power losses, motor cooling, design integration, vibration, and acoustic noise, this comprehensive text covers the fundamentals, practical design and design-related issues, modeling and simulation, engineering analysis, manufacturing processes, testing procedures, and performance characteristics of electric motors today.

Focusing on the mechanical design of modern electric motors, the book:

- Details the design and manufacture of major components and subsystems, such as rotors, shafts, stators, and frames
- Reviews various cooling techniques, including forced air, liquid, and phase-change
- Discusses the analysis and calculation of motor power losses
- Addresses motor vibration and acoustic noise issues
- Presents engineering analysis methods and case study results
- Emphasizes construction, optimization, and applications

Featuring research results from the author's own personal experience and the significant contributions of others, **Mechanical Design of Electric Motors** highlights innovative and advanced electric motors developed in recent decades.

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Editorial Review

About the Author

Wei Tong, Ph.D, PE is chief engineer at Kollmorgen Corporation, a subsidiary of Danaher Corporation, Radford, Virginia, USA. He is an internationally recognized expert on mechanical–electrical–thermal systems. A fellow of the American Society of Mechanical Engineers and a registered professional engineer in the state of Virginia, USA, Dr. Tong holds 28 US patents and 16 foreign patents. He presently serves as an associate editor of *ASME Journal of Heat Transfer* and *International Journal of Rotating Machinery*.

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