

REVIEW

Title : "Electric Machines Design using speed and motor-cad"

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The main audience of the book: industrial engineers that prepare for electric machine design, R&D electrical engineers, graduate electrical engineering students and Faculty, Project Managers in electrical engineering industries.

This book deals with the practical design of electric machinery. Electric machinery are key to electric energy generation (generators) and electric motion control in all industries (motors). While R&D people are abundantly "produced" by Universities, mainly through Ph.D. programs, there is a scarcity of electric machine engineers; yes, we are talking only high performance electric machines with power electronics control (mainly).

The authors, two of the very experienced people in the field, with wide range visibility, are producing a unique practical guide for designing as many as 11 types of electric machines using the SPEED (for electromagnetics) and Motor-CAD (for thermic) software packages owned by www.motor-design.com, and developed over the years by themselves, mainly.

The book starts by describing the Software main attributes and then proceeds with design case studies of 11 types of electric machines, most associated with power electronics: BLDC PM motor, IPMSM, BLAC PM motor, reluctance synchronous motor, 3 phase induction motor, 1-phase induction motor, PM d.c. commutator motor, universal motor, switched reluctance motor, salient pole wound synchronous generator and axial airgap PMSM.

For each motor the presentation starts with the specifications, describes a few fundamental formulae, calculates the main geometry parameters by the Software (SPEED), discusses the performance and operates changes in open loop until electromagnetic (torque, efficiency etc.) specifications are met by the analytical design methodologies in the Software; then the authors call their embedded (proprietary) FEM for key verifications; and check again the performance and come back again to the analytical design code and so on until the design is satisfactory; then thermal Software (Motor-CAD) is used and illustrated for steady state and transients; again, changes are operated until the thermal constraints are met. On the way the authors introduce hard-learned "wisdom pills for design" based on their experience, as design is both art and science because (among other things) the number of variables is in general larger than the number of equations in the machine model; so intelligent approximations are needed all the way.

This "open loop" thorough design algorithm provides the designer with a solid ground for a healthy design; but not an optimal design; optimal, in the sense of including the optimization mathematical algorithm in the design software with a complex objective (fitting) function etc. It is thus for each designer to do optimization design on his own or this missing link will be completed by authors for a future edition.

This practical EM design guide is different from the design textbooks, where each variable, formula and calculation sequence, is detailed; but it is unique (in the world, so far) in providing key knowledge of industrial (rather than academic only) value in a minimum of time. No wonder the top expertise of the authors in the field contributed to the remarkable clarity depth and insights of their book. Not to mention the joy of its literary-like English.

As of such, I warmly recommend this practical guide in designing electric machines to all interested in electric motors and generators associated (or not) with power electronics control of motion and (or) of electric energy flow; for better energy use and higher industrial productivity.

To acquire the book, please write to: shirley.carnegie@motor-design.com

Prof. Ion Boldea, IEEE Life Fellow

Files (2). Electric motor Electric motor /. Loading. Electric Motor (Elektro Motor).SLDPRT. sldprt. November 11th, 2019. The Computer-Aided Design ("CAD") files and all associated content posted to this website are created, uploaded, managed and owned by third party users. Each CAD and any associated text, image or data is in no way sponsored by or affiliated with any company, organization or real-world item, product, or good it may purport to portray. Our Free CAD Library 3/3. Make sure to check out our free GrabCAD Library to find even more useful models! OK, got it. Enjoy the view 1/3. Browse renderings and CAD files in our scrolling viewer. If you feel inspired you can even upload and share your rendering or use for this model in the comments section. Next. Skip tour. Motor-CAD enables design engineers to evaluate motor topologies and concepts across the full operating range, to produce designs that are optimised for performance, efficiency and size. Motor-CAD software's four integrated modules"EMag, Therm, Lab and Mech"allow multiphysics calculations to be performed quickly and iteratively, so users can get from concept to final design in less time. Our integrated physics modules and extensive range of machine templates enable users to experiment with different motor topologies, explore the whole design space and rapidly iterate. Motor-CAD is used in various and complex systems such as hybrid/electric vehicles, aircraft motors, wind power generation, submersible pumps, hermetic compressors, conveyer rollers and motorsport. An electric motor - is an electrical machine by which electrical energy is converted into mechanical energy, for driving various mechanisms. The electric motor is the main element of the electric drive. In some operating modes of the electric drive, the electric motor performs the reverse energy conversion, that is, it operates in the mode of an electric generator. By the type of created mechanical motion, electric motors are divided into rotating, linear, etc. By an electric motor, a rotating motor is most often meant, since it has received the greatest use. The field of science and technolog Electric Machinery Company - Synchronous Motors. Electronically commutated motors. Gearboxes and Geared Motors. Machine Safety and Industrial Sensors. Contactors for Safety Applications. Pushbuttons and Pilot Lights devices. Selection Tools. Motor Control and Protection - Motor Starting Tool. Go. Cross-reference WEG " Switch & Control Gear. Detailed information on the use of cookies on this website is provided in our Privacy Policy. By continuing to browse the site you are agreeing to our use of cookies. Find out more here.