Prof. Ion Boldea, April, 2005
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Subject: new Book review
Title: “Inductors and Transformers for power electronics”
Authors: Alex Van den Bossche and Vencislav Cekov Valchev
Publisher: CRC Press, Boca Raton, Florida, 2004, 447pp.

Though mainly intended for research and design people from industry this book can also be used as an advanced undergraduate or as a graduate course in power and power electronics. As known, Power Electronics is now everywhere: from home appliances and automobiles and other vehicles to industrial automation and power systems, for power quality. The dynamics of this field is very strong and here to stay. And inductors and transformers are key energy storage and voltage changers in power electronics. What makes them special is the high switching frequency (fast transients) which brings with it notable core and eddy current losses.

The authors have brought notable contributions to the art of inductors and transformers for power electronics and thus their book has substance, balance, practicality.

The book is divided into 11 Chapters and 4 useful Appendixes. The 11 Chapters cover in notable detail the following aspects:

- fundamentals on magnetic theory
- fast design approach with eddy currents
- soft magnetic materials
- coil winding and electrical insulation
- eddy current in conductors
- thermal aspects
- parasitic capacitances in magnetic components
- inductor design
- transformer design
- optimal copper/core loss in magnetic components
- measurements

In a second edition, perhaps, a Chapter on inductor and transformers in high power electronics might find its place.

Each Chapter is loaded with practical and theoretical data and knowledge that should be directly useful to the skilled designer and industrial engineer in the field of power electronics; it is also a solid ground for educating newcomers in the field; and they come every year, as you know.

I would like to emphasize here the particular strength of Chapter 5 on eddy currents in conductors and Chapter 11 on “Measurements” with a splendid citation from Plato (330BC!!) on the subject

All in all, I warmly recommend this book to people in industry and University which deal with power electronics and electric power.

Sincerely,
Ion Boldea.