

# POWER ELECTRONICS:

## TOPOLOGIES, MAGNETICS AND CONTROL

Power Electronics field is an interdisciplinary field started in 1960's requiring expertise in three key areas: converter switching circuits, magnetic circuits and nonlinear control methods. In order to obtain the highest possible efficiency, the knowledge of the switching devices used and how to drive them efficiently is also required.

The invention of the Ćuk converter on April 1, 1975 highlighted importance of introduction of the capacitive energy transfer in addition to inductive energy transfer. This is only now recognized as the ceramic chip capacitors developed in the meantime have been improved by an order of magnitude to result in simultaneously much reduced sizes, losses and costs as well as providing much increased power capability. The advent of soft switching signaled also that new switching methods could be developed to further increase efficiency by reducing and even eliminating switching losses. The present four volume series provides the four pillars on which new Power Electronics System Technology is based upon. This series provides the firm foundation for the understanding of the new Power Electronics Systems Switching Technology.



### DR. SLOBODAN ĆUK

Dr. Ćuk was a Professor of Electrical Engineering at Caltech for 25 years where he supervised 35 PhD students completing their PhD degree in Power Electronics. Dr. Ćuk is also a founder and CEO of TESLAcO. His key inventions: Ćuk converter, State- Space Averaging, Coupled Inductors/ Integrated Magnetics, Tesla converter, Hybrid and Storageless Switching, Single stage isolated Bridgeless PFC, Ćuk-buck and Ćuk-buck2 converters, Ćuk rectifier, Rapid On-board Charger for EVs, Isolated Storageless Ćuk converter, Ćuk ...

*...Two volume paperback edition of 1981 was responsible for my getting into Power Electronics. I learned a lot from them and enjoy now a very rewarding lifetime professional career.*

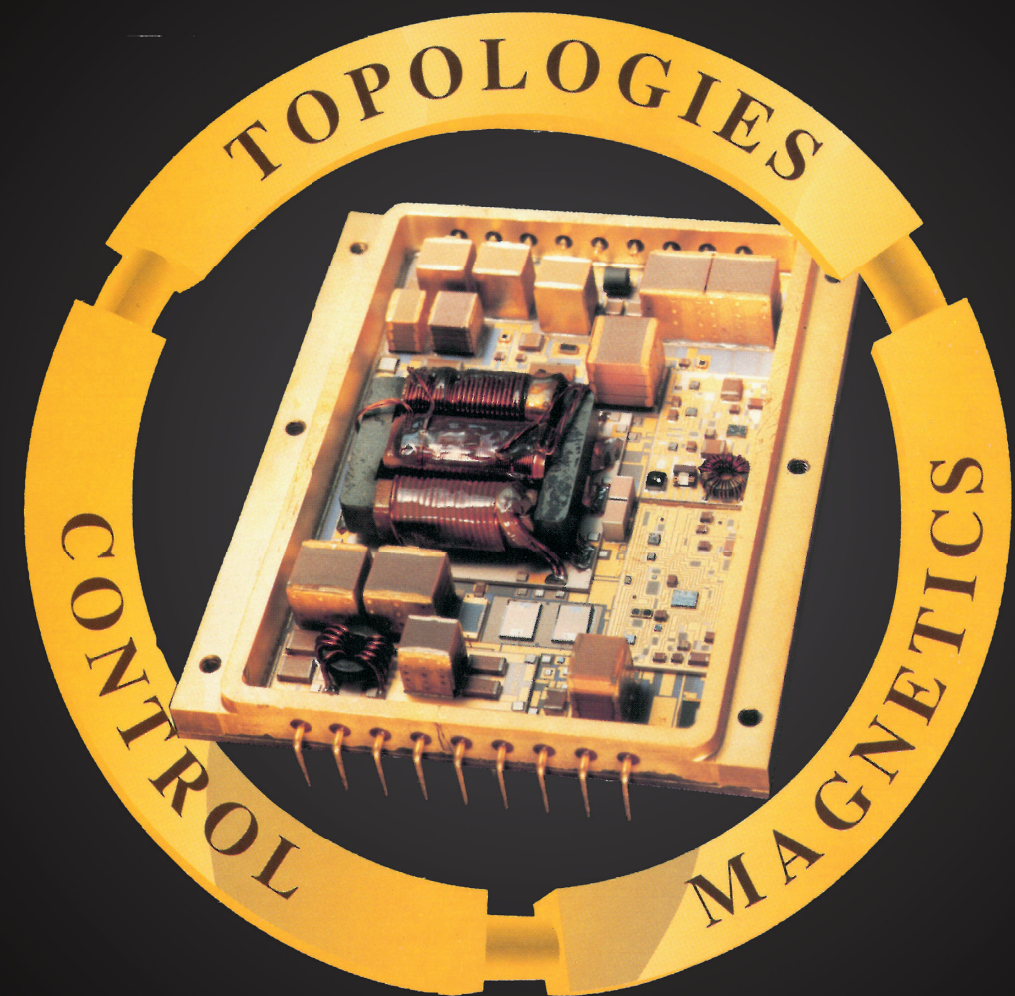
*...I received the three volume hardcover edition as a part of the Power Electronics Course Dr. Ćuk gave in Sweden in 1985. Dr. Ćuk is not only world recognized educator but also the leading Pioneer in the world of Power Electronics and the most exciting and relevant innovator in this field today, bar none!*



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