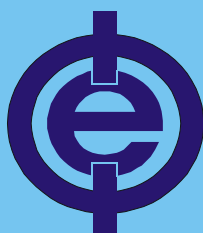


University of Niš
Faculty of Electronics

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**DESIGNING AND MODELLING OF
THE POWER ULTRASONIC
TRANSDUCERS**



Edition: Monographies



MPI Interconsulting

ULTRASONICS - SONOCHEMISTRY - INNOVATION

A SERIES OF EXTRAORDINARY AND UNIQUE BOOKS RECOMMENDED BY MPI

Dr. Milan Đ. Radmanović, Dr. Dragan D. Mančić

DESIGN AND MODELING OF THE POWER ULTRASONIC TRANSDUCERS

Published 2004 in Switzerland by MPI

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Book can be ordered from:

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2400, Le Locle

Switzerland

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Phone/Fax: +41- (0)-32-9314045

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PREFACE

Field of power ultrasonic technique, which represents an important field of industrial electronics, in recent two decades experienced very swift and dynamic development. An intensive development concerns as design and construction of new ultrasonic devices, as well as broadening of application fields of power ultrasound in many industrial branches and processes (mechanical, electric, and chemical industry). Aside with appearing of new applications of ultrasound, new, more perfect sandwich transducers are designed and developed, and numerous scientific papers appeared, in which are treated different aspects of power ultrasonic technique, especially different electromechanical models by which is obtained design and optimization of ultrasonic transducers.

In this monograph firstly is performed systematization of different existing procedures and methods for modeling of power ultrasonic transducers. Besides that, new procedures of modeling, design, and optimization of power ultrasonic transducers are presented, based on previously realized original models of piezoceramic and metal rings. Thus is completed design of a sandwich transducer as a unique system, consisted of piezoceramic rings, emitting and reflecting metal ending, as well as of central bolt. Basic idea of the authors was to help with realized models to the designers of new ultrasonic systems, due to the fact that currently there is no literature from this field in Serbian.

Original results, presented in this monograph, are product of several-year-research in the field of power ultrasound in the Laboratory for energetic electronics and control of electroenergetic transducers in the Faculty of Electronics in Niš, wherefrom originated over 50 scientific papers from this field. Concrete results, presented here, are part of one master thesis and one doctoral dissertation, realized in the frame of research in this field.

On this occasion authors express their gratitude to the reviewers, Prof Vanča Litovski, Ph.D. and Prof Stojan Ristić, Ph.D. on their useful suggestions and notes.

Niš, January 2004

Authors

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Edition: Monographies

ISBN 86-80135-87-9