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| Titolo | Piezoelectric Electromechanical Transducers for Underwater Sound . Part I Introduction to Energy Method of Treating the Transducers // Boris S. Aronov |
| Pubbl/distr/stampa | [s.l.] : , : Academic Studies Press, , 2022 |
| ISBN | 1-64469-825-0 |
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| Descrizione fisica | 1 online resource (174 p.) |
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| Nota di contenuto | Frontmatter -- FOREWORD -- PREFACE -- ACKNOWLEDGEMENT -- TABLE OF CONTENTS -- CHAPTER 1 INTRODUCTION -- CHAPTER 2 DESIGNING TRANSDUCERS -- CHAPTER 3 TRANSDUCER PERFORMANCE ANALYSIS -- LIST OF SYMBOLS -- INDEX |
| Sommario/riassunto | The book is the most comprehensive coverage of piezoelectric acoustic transducers and all the related aspects of practical transducer designing for underwater applications in the field. It uses a physics-based energy method for analyzing transducer problems. This gives great physical insight into the understanding of the electromechanical devices. The great benefit of the energy method is that the multidisciplinary subject of electro-mechano-acoustics can be presented in parts and the solutions to the problems (electrical, electro-piezo, mechanical, and radiation) are combined using equivalent electrical circuit network theory. The energy and equivalent electromechanical circuit method at first is illustrated with transducer examples that can be modeled as a single degree of freedom system (such as spheres, short cylinders and flexural beams and plates). Then transducers are modeled as multiple degrees of freedom devices and the results are presented using multi contour electromechanical circuits. Special focus is made on the effects of coupled vibrations on |

the transducer performance. The Book gives also extensive coverage of acoustic radiation including acoustic interaction between the transducers. It provides practical results that are directly useful for the transducers modeling. While there have been many studies of acoustic radiation of various shapes, non-previous presented the results in terms of such practical utility.
