

# Preface

The control of noise and vibration has been always proved to be a difficult task and in many cases it is not feasible. For many years, passive, active and semi-active techniques have been considered and developed. Flexible isolation systems or structural damping, control of suspension parameter or generating active force are used for vibration and noise control. This book is a result of scientific meeting of people working on these problems. The most important technics of vibration mitigation are active methods so the book collects papers as a contribution to discussion on Active Noise and Vibration Control Methods. Active methods involve the usage of controllable systems to reduce the transmission of vibration through the object, structure etc. In the book there are 31 papers included, collected in four chapters.

In the "Chapter 1 Active Noise Control" are analysed the noise control methods used in systems to reduce the transmission of vibration from one plant or structure to another. Authors considered different methods of noise cancelation. They use such methods as high-order spectra based method, neural networks or virtual microphone to obtain goals. They developed hardware and software to reduce the transmission of noise. The major research areas include active noise control.

"Chapter 2 Active Vibration Control" collects papers about active and semi-active methods of vibration reduction. Authors developed control systems for active and semi-active system. Here we have simulation and laboratory work. Different subjects, objects, controllers and structures considered in this chapter are one of the most interesting part of the book.

In the "Chapter 3: Methods of Measurements, Modeling and Identification" authors formulated models of different structures. They developed models, identified their structure or parameters, simulate them and analysed results. Considered objects are from wide areas of engineering. Here we have paper where author investigates vibrations in seals, others consider balance of human body, in the next work we have identification military machine suspension. Another interesting topic is the vibration usage for diagnostic health of rock bolts.

"Chapter 4: Smart Materials and Devices" deals with the most interesting materials used in constructions of vibration systems. Authors of papers used shape memory alloys, magnetorheological fluids and piezoelectric ceramics as an active parts of actuators used in active or semi-active suspensions of machines and systems.