Technische Akustik
Michael Möser
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The new 2015 edition of Michael Möser's book on *Technical Acoustics* has been published (with the original German title "Technische Akustik") and I have been asked to review it for US readers. The book is in the German language. I am not quite sure whether it makes any sense to review a German book which – how could it be anything else – is in pure German and what use a review could be for English reader. Nevertheless, I agreed and here is my review. It is perfect for those readers who know the language.

The book's title has a long history that dates back to Lothar Cremer's textbook on *Technische Akustik* with its first edition dating from 1971. That first edition was a textbook supposed to be used by students parallel to their studies or by other readers who were interested in the subject. The present edition is called "5th edition" and that counts starting from 1971 with several intermediate editions by L. Cremer and M. Hubert and, since 2002, by M. Möser. One can imagine that this long history and the parallel change of contents of the book represent also the change of topics and methods in technical acoustics being developed and applied within the last 45 years (with the number of pages increasing from 334 to 545).

The Chapters 1 and 2 deal with (human) perception of sound and basics of wave propagation, the latter including details on measurement methods for sound intensity (but nothing else). Each of the chapters – also the subsequent ones – includes a final section with some 5 to 10 numerical exercises (the correct results are found in an annex).

Chapter 3 covers (airborne) sound propagation and radiation, Chapter 4 treats structure-borne sound (also referencing to Cremer and Heckl's book having the same title), and Chapter 5 describes elastic foundations of machinery and represents rather "practical" aspects. This includes the evaluation of transmission paths and the measurement of the "loss factor."

Chapters 6 and 7 join together to cover sound absorption and the basics of room acoustics. This starts with sound in pipes, measuring of the absorption coefficient in Kundt's tube with single or dual microphones. Practical aspects for real absorber design follow. The chapter on room acoustics just covers "classical" topics and does not address modern numerical methods used for prediction of sound in spaces.

Chapter 8 is on sound insulation, starting from single and double walls, including impact sound transmission and improvement techniques.

Chapter 9 covers muffler acoustics and the various design principles from absorbing to resonant muffler types. The chapter closes with a section on the exact calculation with an arbitrary wall impedance.

Chapter 10 is on assumed "simple things": noise barriers. However, astonishingly, it does not start with data on measured path difference, but recalls the historical basics established by A. Sommerfeld's semi-infinite edge. Results are discussed using stand-stills (screen shots from a movie) from x-y-plane animations (called "blue movies" in Berlin, due to their blue background).

Chapter 11 discusses electro-acoustical transducers used for airborne sound measurements, including acoustical aspects of "acoustical antennas/cameras" and microphone array techniques.

Chapter 12 is on what is sometimes believed to be the main issue of technical acoustics nowadays: noise control and, in specific, active noise control. It reflects on active noise control measures in enclosed spaces (cars, airplanes) and the stabilization of self-induced oscillations (as can be studies in musical instruments, either blown or using strings).

Chapter 13 covers what Chapter 11 does not include: properties of transducers used for sound reproduction (usually called "loudspeakers"). This includes basic aspects of system theory like linearity, time invariance and impulse response, concluded by Fourier's approach with its various aspects.

The final and short Chapters 14 and 15 are on the calculation with levels and on complex pointers followed by the chapter showing the calculation steps and results for the examples at the end of each chapter.

On the whole, the book is recommended for those interested in the fundamentals of technical acoustics. It invites a closer reading, at least some chapters represent an up-to-date status. However, this holds for readers of German or if there were an English edition available. Finally, my wish is that the Springer Editors go for a translation of this modified classical work, even with serious competitors in the English speaking world.

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