

Sound Transmission Through Buildings

Sound Transmission Through Buildings Using Statistical Energy Analysis

Robert J.M. Craik

Gower Publishing, Gower House, Croft Road, ALDERSHOT, Hampshire, GU11 3BR, United Kingdom, Ashgate Publishing Company, Old Post Road, Brookfield, VT 05036-9704, USA, 1996.

261 pp., hard cover, USD 94.95

This text describes the use of statistical energy analysis (SEA) on sound transmission through buildings as developed in the United Kingdom over a period of 15 years partly through a series of research grants from the Engineering and Physical Science Research Council. Much of the work was carried out at the Building Research Establishment.

A tutorial introduction to SEA emphasizes room-to-room transmission, sound transmission mechanisms and power flow. Then follows a discussion of modeling with SEA which includes the definition of subsystems and their properties (damping, wave propagation, etc.)

The transmission between these subsystems is then quantified in terms of coupling loss factors (CLFs).

This analysis then leads into a discussion of structure-borne sound transmission, and determination of the performance of building systems using SEA. It is pointed out that while SEA offers few advantages for simple systems such as single walls, the performance of more complex systems such as double walls can be understood because individual transmission paths through the structure can be analyzed.

Both direct and flanking transmission paths are covered in the book, and many examples of measured vs calculated results are given.