Noise and Vibration Mitigation for Rail Transportation Systems: Proceedings of the 9th International Workshop on Railway Noise, Munich, Germany, 4–8 September 2008
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This book is a collection of 64 papers that were presented at the 9th International Workshop on Railway Noise (IWRN). This workshop is organized by an informal international committee (the editors of the volume) and usually is held every three years. Recent meetings have been held in Buxton, England, Portland, Maine, and a small island in the south of France. Although it has always seemed a bit strange when meetings focused on rail transit are held in isolated areas where rail transit is not to be found, recent meetings have been well attended and the presentations have represented the current state of the art in rail related noise and vibration. The breadth of the topics covered is suggested by the session topics: two on high speed trains, two on ground-borne vibration, two on rolling noise, two on prediction tools and theoretical models, two on grinding, corrugation and rail roughness, two on new noise reduction technologies, and one on cost benefit considerations for noise abatement.

The papers in this volume tend to be oriented towards research rather than to practical applications, although there is plenty of useful information on practical applications. The 120 workshop participants were from 17 countries with presentations from all 17 countries. Although the majority of the presenters were from European countries, as would be expected given the venue of this conference was Munich, there was considerable representation from Japan, China, Australia and other countries. The papers all cover some aspect of noise and vibration from rail systems. The majority of papers are on noise although there are 15 papers on measurement, prediction, and/or control of ground-borne vibration. There are even 11 papers specific to noise from high-speed trains including three papers on "micro-pressure" waves that generate a sonic boom type sound, radiating from high-speed rail tunnel portals.

This book is a valuable reference for anyone involved in noise and vibration studies for rail systems. Although many of the papers are full of complex equations, it is not all mathematical and, with careful reading, there is plenty of practical information to be found embedded within the papers. Some interesting generalizations are that the Japanese papers focused on high-speed trains, the Australian papers seemed to focus on practical solutions to problems with transit and freight trains, and the Chinese papers applied to a broad swath of rail technologies and tended to be on the theoretical side.

An observation: noise from freight trains appears to be a substantially bigger problem in European countries than in the USA. A particular problem in Europe is the use of cast iron brake shoes on freight trains. The brakes are applied directly to the wheel tread and create roughness on the wheel operating surface that leads to high noise levels. A paper on the most economical approach to reducing freight train noise in Europe found that switching to composite brake shoes that have less negative effects on the operating surface of the wheels was the most economical of the available noise reduction measures. Apparently there are issues with the cost of switching and the logistics of the transformation that have held up the process.

As a summary, this volume is a book worth having as a good overview of rail noise and vibration problems worldwide. Recommended.

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