



Recent developments in the prediction and measurement of traffic (road, rail and a little aircraft) noise in Europe - An overview of the HARMONOISE, IMAGINE and NORD 2000 projects

Dr Hans Jonasson

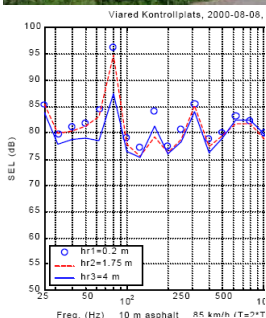
SP, Swedish National Testing and Research Institute

The general trend in Europe is to harmonize prediction methods and to work with long term averages and take into account different meteorological conditions. This means that sound propagation is calculated with methods capable of handling these variations. Engineering methods use linearized sound speed profiles calculated from real sound speed profiles above the ground. The acoustic impedance of the ground is an input parameter. By using Fresnel zones it is possible to mix infinitely many ground surfaces and ground discontinuities such as transitions from hard to soft surfaces. The same propagation method is used for all kinds of sources.

Road and rail traffic sources are modelled as point sources, each source with a specified sound power level and directivity. For road vehicles one source is tyre/road noise and another propulsion noise. For trains rolling noise from rail is separated from that of wheels. In addition other sources deal with propulsion noise and aerodynamic noise. Due to these models it is possible to vary road surfaces, rail roughnesses, braking systems and rail tracks when making the calculations. For roads the temperature is taken into account. For measurement methods, great efforts are made to incorporate the ISO GUM into the uncertainty calculations. Uncertainties due to the instrumentation, the selection of microphone location, the operating conditions of the source, the variations in meteorological conditions and the residual sound are discussed together with the effects of traffic flow corrections and other supplementary calculations.

Hans Jonasson is the head of the Acoustics Section at SP, the Swedish National Testing and Research Institute, in Boras, Sweden. He has conducted and coordinated extensive research in relation to sound propagation, source modelling and test methods for trains, road vehicles and ground impedance and contributed to the development of the current Nordic noise prediction methods (air, road, rail and industrial). He was project leader for the NORD 2000 rail prediction method and for the road traffic noise propagation components of HARMONOISE. For the IMAGINE project he coordinates and leads development of the measurement and monitoring methods.

Hans Jonasson is well known for his work in relation to ISO 9613-2, the ongoing revisions to ISO 1996 and for his contribution to numerous CEN and NORDTEST standards. He has published widely in relation to aspects of building acoustics, including floor impact isolation and sound intensity applications.



Date & Time: 6:30pm, Thursday June 29, 2006

Venue: UQ Mechanical Engineering

Room 105
Mansergh-Shaw Building (Building 45)
The University of Queensland
St. Lucia Campus

Refreshments will be provided

COST: Free For Members

\$10.00 Guests

RSVP: Richard Deveraux: AAS QLD Secretary

rdevereux@acran.com.au

