Session 5pNSb

Noise and ASA Committee on Standards: Consumer Product Noise

Matthew A. Nobile, Cochair
IBM Hudson Valley Acoustical Lab., M/S P226, Bldg. 704, Boardman Road Site, 2455 South Rd., Poughkeepsie, NY 12601

Takeshi Toi, Cochair
Chuo Univ., Dept. of Precision Mechanics, Faculty of Science and Engineering, 1-13-27 Kasuga, Bunkyo-ku, Tokyo 112-8551, Japan

Chair's Introduction—2:15

Invited Papers

2:20

5pNSb1. Noise emissions from powered hand tools: A consumer alert!. Charles Hayden and Edward Zechmann (NIOSH, 4676 Columbia Pkwy., C27, Cincinnati, OH 45226)

Existing standards for acquiring sound power levels of powered hand tools specify, for the most part, that sound levels be gathered in the unloaded test condition. However, there is an increase in sound level when the power tool is tested in the loaded condition. There are two purposes for gathering sound power level data: (1) determination of hearing loss hazard or irritation and (2) part of an engineering design optimization effort. The former is the focus of the National Institute for Occupational Safety and Health efforts. Sound power level data were gathered in the loaded and unloaded conditions from a variety of electrically powered hand tools. A model was then used to estimate the A-weighted sound pressure level at the operator's ear from the A-weighted sound power (LWA) measurements of powered hand tools. The magnitude of LWA is found to be a reasonable predictor of the magnitude of sound pressure level exposure that a powered hand tool operator might experience across a variety of acoustical environments. This presentation explores the methods used to gather sound power levels, an evaluation of the model, and an examination of differences found between loaded and unloaded tool test conditions.

2:40

5pNSb2. Protocol for measuring dishwasher sound power levels. Kevin Herreman and Richard Godfrey (Owens Corning Corp., 2790 Columbus Rd., Rte. #16, Granville, OH 43023, kevin.herreman@owenscorning.com)

A leading retailer of home appliances came to the OC acoustics laboratory to evaluate the noise generated by dishwashers sold in their stores. A protocol based on a methodology used in Europe was used. It was modified to account for North American building standards. The standard provides an overall sound power level determination for the complete dishwasher cycle with and without the drying portion of the cycle. As a result customers making a purchasing decision can compare the noise performance of the various products using the same yard stick.

3:00

5pNSb3. Noise exposure limits and measurements for earphones. K. Allen Woo (Plantronics, Inc., 345 Encinal St., Santa Cruz, CA 95060)

There are noise exposure concerns regarding the use of audio earphones and telephone receivers. The permissible noise exposure limits have been defined for the occupational environment for many years, for instance, the US Code of Federal Regulations, 29CFR1910.95, Occupational noise exposure and the Directive 2003/10/EC of European Parliament on Minimum Health and Safety Requirements. Those permissible noise exposure limits are defined for noise exposure in an ''open-field'' environment. An open-field environment is an environment where the noise sources are at a distance from a person's ear. The sound or noise field can be a combination or any of a free field, or partially reflected, diffused, and reverberant fields. Nonetheless, the noise exposures from earphones are not in an open field. They are localized at or inside the user's ear. Conventional open-field noise exposure measurement methods do not apply. During the last 15 years or so, a few different test methods for measuring noise exposure from earphone or telephone receivers were developed. The standards of ITU-T P.360, UL 60950-1, IEEE 269, and EN 50332 were developed mostly by the telephone industry. This presentation addresses the common permissible noise exposure limits, how to relate the limits to earphones, and how to measure them.