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Determination of optimum dimensional parameters for low cost noise attenuators for generators

A.S. Pannila, H.P.N.J. Gunasekera and W.L.D.D.C. Jayaratna
Metrology and Instrumentation Division, Industrial Technology Institute

The splitter attenuation are widely used for noise abatement of generators. Normally in splitter attenuators rectangular duct is split into several such sections, each lined with sound absorbing materials. The acoustic performance of an attenuator depends on factors such as sound absorption coefficient of the lining materials, thickness of the absorbing lining, width of air gap and length of attenuator. Two adjacent reverberation rooms are arranged with an opening between in which the variable test attenuator is installed. An approximately diffuse sound field is produced in one room with required sound pressure levels in pure tones. The "Sound Transmission Loss" (SLT) through the attenuator was determined using a probe microphone. The test was carried out in the frequency range 0f 250 Hz to 4000 Hz and it was repeated with varying above parameters one at a time.

Several engineering aspects are incorporated in the design of the enclosure. The first, and probably the most paramount, are the acoustical effects of the enclosure itself. The second important consideration for the enclosure desing involves the heat transfer characteristics. The requirements of cooling air to the generator are discussed.

The results revealed that attenuator design is a compromise between acoustic performance, different size (height, width and length) and material cost. Low cost noise attenuators could be designed with good acoustical performance to suit the frequency spectrum of various generators.