

THE ACOUSTIC PERFORMANCE OF LAGGING PROCEDURES

A T Fry

Sound Attenuators Ltd., Colchester, Essex

In certain industries the standard solution for noise control problems has been close clad lagging. This has often been of an even less than empirical nature from experiences gained from the better understood need for thermal lagging. Shop floor engineers have simply noticed that having lagged, for instance, an industrial fan for thermal reasons, the noise radiation was incidentally reduced.

Acoustic variants of this thermal lagging have invariably included the use of additional mass control, and the thermal insulation was retained as a resilient interspace. Sometimes detrimental resonances were predicted for the mass spring system created.

Some very thorough and worthwhile information was generated by both British Gas and CEBG with respect to pipe lagging for the reduction of radiated noise. Generally, these results were not extended to frequencies much below 500Hz. However, the case for flat panel aspects of machines seemed less well studied and published, and a series of tests were undertaken on proprietary compounded materials derived by Salex Acoustic Materials Ltd., and for product applications by Sound Attenuators Industrial Ltd..

To set up the format of a laboratory study 1.2m metal cubes were constructed in 3mm and 5mm steel. An airborne source configuration and a structure-borne single point input excitation were available to study the progressive addition of compound multiple treatments, including the use of interlayers and sheet steel protective cladding. Some of the materials produced sufficiently improved total insertion loss that flanking through the reverberant test chamber floor structure was becoming a limiting feature. To this end, the whole assembly was mounted onto a proven and effective local floating floor construction to minimise this flanking. Some limiting damping material applications were tested at the end of the programme.

The experimental configuration will be discussed and some results indicating trends presented for proprietary lagging and cladding materials.

