

CANADIAN STANDARDS ASSOCIATION ACTIVITY IN ACOUSTICS

Tim Kelsall

Hatch

2800 Speakman Drive

Mississauga, Ontario L5K 2R7

tkelsall@hatch.ca

ABSTRACT

This article gives an overview of Canadian Standards activities in Canada, especially those of the Canadian Standards Association. They currently have 15 Acoustics Standards and two more with significant acoustics content. Two committees and a variety of subcommittees involving many Canadian acousticians and industry representatives write and review these standards for the Acoustics community. An overview is given of the main activities and future directions of these groups

RÉSUMÉ

Cet article présente une vue d'ensemble des activités de normalisation au Canada, tout particulièrement celles de l'Association canadienne de normalisation. L'association a présentement 15 normes acoustiques et deux autres comportant des normes acoustiques détaillées. Deux comités et divers sous-comités comprenant plusieurs acousticiens canadiens et représentants de l'industrie rédigent et passent en revue ces normes pour la communauté acoustique. Une vue d'ensemble de leurs activités premières ainsi que la direction future de ces groupes y est présenté.

1.0 INTRODUCTION

This article is intended to give an overview of acoustics standards activity in Canada, concentrating on the CSA acoustical standards activities. The Standards Council of Canada oversees all Canadian standards bodies, including CGSB, CSA and the Technical Advisory Groups formulating Canada's input to ISO and IEC international standards. The Canadian Standards Association is the largest standards writing body in Canada and one of the largest in the world. There have been CSA standards in Acoustics for over 25 years and the Z107 Committee on Acoustics and Noise Control is still active in many areas.

The term Standard as used here refers to consensus standards developed by standards writing bodies such as CSA and ISO. They are written by Technical Committees, Subcommittees and Working Groups formed of volunteers representing various stakeholders and operating by consensus, that is, every reasonable effort is made to address and resolve disagreements between members. CSA and other standards writing bodies provide a framework and set of rules for developing standards, approving them and keeping them current. They also publish standards and provide testing services where required by standards. The classic example in Canada is the Electrical Code, published by CSA.

Standards are not regulations. They are developed by groups which are intended to represent diverse interests, not by regulators. In some cases, such as the Electrical Code, provin-

cial or federal regulations may refer to standards, effectively giving them the force of law. In other cases, such as the playground safety standard, it is up to the users to decide whether they want their playground to meet the requirements of the standard.

Several Acoustics standards are referred to by regulations, notably Z107.56, Procedures for Measurement of Occupational Noise Exposure, is referred to in the Federal and BC regulations and the new draft Alberta regulation. In most other provinces its use is voluntary but measurements taken using it are accepted as valid by most regulators.

2.0 COMMITTEE ACTIVITIES

There are two CSA Technical Committees in Acoustics. Z94 is responsible for the Hearing Protection Standard Z94.2 which defines Type A, B, and C type hearing protectors and is widely referred to in occupational noise regulations. They are currently undertaking a major review of this standard in light of changes to the US hearing protector standards and procedures.

Z107, the Acoustics and Noise Control Technical Committee, is responsible for all other Acoustics standards. Several members belong to both committees and provide liaison between them. Z107 is divided into 9 subcommittees. These include: Hearing Measurement, Vibration, Powered Machines Industrial Noise, Transportation Noise,

Editorial (which reviews all proposed standards), Building Acoustics, Instrumentation Calibration and liaison with the Canadian Steering Committee for ISO TC43 and TC43(1). Each subcommittee is responsible for the standard or standards within its area. Z107 was one of the first CSA committees to be structured in this way. Now many other committees have the same structure.

Recently, as global harmonisation becomes more important, CSA has started to adopt and endorse international standards where possible rather than writing their own. This is not only more effective, it is also less expensive. Preparing a new standard from scratch can cost a considerable amount, even with the writing being done by volunteers. Adopting a standard, which means republishing it, with changes or additions if necessary, costs less than half. Endorsing, which means that the standard has been reviewed and found suitable for Canadian use is the least expensive option, but less useful because the standard is not so readily available. Given the international nature of many Canadian industries the use of reviewed international or US standards within the Canadian context makes eminent sense.

Table 1 shows all the Canadian Standards currently in force and also lists two standards whose Acoustics sections were written with the assistance of the Z107 committee. This table can also be found at the CAA website and will be kept up to date there.

3.0 CURRENT ACTIVITIES

Some current highlights include:

3.1 Transportation

The newest standard to be published is likely to be Z107.9, Highway Noise Barriers. It is expected out in December 1999. This standard is an adaptation of the Ontario MTO Highway Noise Barrier specification. It is intended to provide municipalities, developers, road and highway departments, railways and industry with a standard specification which can be used to define the construction of barriers intended for long term use in Canadian conditions. Specific manufacturers' barrier designs are certified as complying with the standard in such areas as: materials used, weathering and corrosion resistance testing, STC, NRC, etc.

In addition, each barrier installation is reviewed and certified for compliance with such items as footings design, material sample testing, welding, caulking, backfilling, etc. As can be seen, this is much more than simply an acoustics standard, but it fills an important need in the industry and drafts have been used by several municipalities in recent years. In addition, the US Highway Design Manual will be harmonised with the CSA standard, as will the Ontario OPS. ANSI is also looking at adopting the standard or harmonising with it. This ultimately could mean that a certified barrier would be qual-

ified to be used anywhere in North America.

3.2 Industry

The Industrial Noise Subcommittee is the most varied and active subcommittee.

Ongoing activities include:

- a) Technical review of the proposed Alberta occupational noise regulation (the committee routinely undertakes technical reviews of proposed new Acoustics regulations in Canada),
- b) A working group looking at ISO and ANSI noise rating systems (for tonality and impulse corrections among others) and their use in Canadian environmental noise guidelines,
- c) A writing group preparing Guidelines For The Declaration Of Machinery Noise Emission Levels, discussed below.
- d) An ad-hoc writing group preparing an acoustics chapter for a new version of the CSA Office Ergonomics standard
- e) A group looking at rewriting or updating the current Blasting Noise and Vibration standard
- f) A group looking at adopting or endorsing ISO 9613 (2) on propagation of industrial noise and either integrating it with or replacing the current CSA standard.

3.2.1 Guidelines For The Declaration Of Machinery Noise Emission Levels

One of the initiatives underway under the auspices of the Industrial Noise subcommittee is a writing group preparing Guidelines For The Declaration Of Machinery Noise Emission Levels which would be a voluntary guide for noise labelling of machinery for use in Canada and compatible with the European regulations to allow machinery to be sold into that market. Labels in this context refer to any statement of sound levels produced by the equipment and included with it. Measurements are made according to ISO standards and include estimates of the likely variability of the measurements. This initiative may ultimately make it much easier for Canadian industry to buy quiet machinery with confidence and for Canadian manufacturers to sell into the European market.

3.2.2 Office Acoustics

Another of the initiatives listed above is a working group formed by the Industrial Noise Subcommittee to assist the Office Ergonomics committee with a major revision to their standard. The same group assisted them at the last minute with an Acoustics chapter to the existing standard when it was published 10 years ago. This section is now being rewritten, expanded and brought up to date. It is also being aimed specifically at non-acoustical users to give them an

idea of the issues involved and the resources available to them to provide good acoustical conditions in offices.

3.3 Building Acoustics

The Building Acoustics subcommittee is currently trying to influence the rewriting of ASTM 336 so that it can be endorsed or adopted and be compatible with our National Building Code. The alternative would be to adopt and modify it or to write a Canadian Standard.

3.4 Instrumentation and Calibration

The Instrumentation and Calibration subcommittee now have no standards of their own, instead they have endorsed or adopted IEC instrumentation standards and ANSI standards which can then be referred to in Canadian regulations and other standards. Every five years or more frequently the standards are reviewed automatically to ensure that the latest standards are being endorsed and that they are still suitable for use in Canada. In addition, the chairman, George Wong, is actively involved with the ISO and IEC working groups.

3.5 Editorial

The Editorial subcommittee also has no standard of their own. They have endorsed the ANSI Standard for Acoustics Terminology and have had input into it. This standard is updated regularly by ANSI and is reviewed by this subcommittee each time it is revised. The Editorial subcommittee also reviews every standard written by a Z107.9 subcommittee, both as a final technical review and to ensure it meets the CSA editorial requirements.

3.6 Main Z107.9 Committee

The committee meets twice a year, once during the Canadian Acoustics Week and once in the spring. They review progress by each subcommittee and vote on any new work proposals. These are then forwarded to CSA for approval. When working groups have drafted new documents or made recommendations to endorse or adopt international standards, these are reviewed by the appropriate subcommittee. They may also be circulated to a wider stakeholder group for review. Once the subcommittee is satisfied with the result, it is passed to the main committee for formal balloting. This balloting is generally done formally by mail. If there are any negative ballots, the subcommittee chairman will work with the voter to resolve the issue, which is usually possible.

The main committee is the last technical hurdle for a standard. The CSA will then have their editors put it into final form. The steering committee, to which the main committee reports, approves work and reviews completed standards, however they cannot make technical changes.

One other initiative that the main committee has been trying to propose for some years is a Guideline to provide a standard which summarises the major Canadian and International Standards for Canadian industry users. This is intended to make Acoustical Standard more accessible to Canadian users.

The main committee and subcommittees meet twice a year. New members are encouraged and anyone interested may contact Cameron Sherry, the Chairman, or the author, the vice chair. This article is the first in a series which will provide more information on the activities underway in all areas of Acoustics Standards in Canada.

TABLE 1- CSA ACOUSTICS STANDARDS

Z107.0-1984

Definitions of Common Acoustical Terms Used in CSA Standards

CAN3-Z107.4-M86

Pure Tone Air Conduction Audiometers for Hearing Conservation and for Screening

Audiomètres tonals à conduction aérienne pour la préservation de l'ouïe et pour le dépistage

CAN/CSA-Z107.6-M90

Pure Tone Air Conduction Threshold Audiometry for Hearing Conservation

Z107.21-M1977 (R1993)

Procedure for Measurement of the Maximum Exterior Sound Level of Pleasure Motorboats

Z107.25-M1983

Procedure for Measurement of the Exhaust Sound Level of Stationary Motorcycles (rp: 11/83)

CAN/CSA-Z107.31-M86 (R1994)

Test Procedures for the Measurement of Sound Levels from Agricultural Machines

Méthodes d'essai pour le mesurage des niveaux de bruit émis par les machines agricoles

CAN/CSA-Z107.32-M86 (R1994)

Test Procedure for the Measurement of Sound Emitted from Construction, Forestry, and Mining Machines to the Operator Station and Exterior of the Machine (rp: 02/87)

Méthodes d'essai pour le mesurage du bruit émis par les engins de construction, forestiers et miniers, au poste de l'opérateur et à l'extérieur de la machine

Z107.51-M1980 (R1994)

Procedure for In-Situ Measurement of Noise from Industrial Equipment

Z107.52-M1983 (R1994)

Recommended Practice for the Prediction of Sound Pressure Levels in Large Rooms Containing Sound Sources

Z107.53-M1982 (R1994)

Procedure for Performing a Survey of Sound Due to Industrial, Institutional, or Commercial Activities

CAN3-Z107.54-M85 (R1993)

Procedure for Measurement of Sound and Vibration Due to Blasting Operations

Méthode de mesure du niveau sonore et des vibrations émanant des opérations de dynamitage

CAN/CSA-Z107.55-M86

Recommended Practice for the Prediction of Sound Levels Received at a Distance from an Industrial Plant

Pratique recommandée pour la prévision des niveaux sonores reçus à une distance donnée d'une usine

Z107.56-94

Procedures for the Measurement of Occupational Noise Exposure

Méthode de mesure de l'exposition au bruit en milieux de travail

Z94.2-94 CAN/CSA-Z94.3-92

Hearing Protectors

Protecteurs auditifs

Standards with Acoustics Component:

Z62.1-95

Chain Saws

CAN/CSA-Z412-M89

Office Ergonomics

L'ergonomie au bureau

LONG TERM Leq MEASUREMENTS MADE EASY!

to switch measurement ranges during operation. The ergonomic design makes the unit truly easy to operate.

The integrated memory can hold, for example, 12 hours worth of data (432,000 measurements) when gathering instantaneous values at intervals of 100ms. A built-in memory card slot provides an efficient means for high-speed and problem free transfer of data to a computer for off line processing. No software is needed!

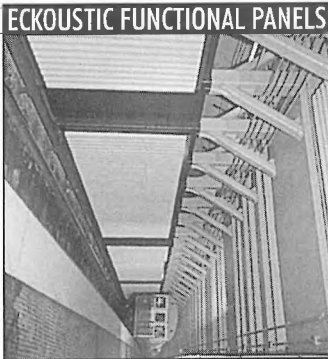
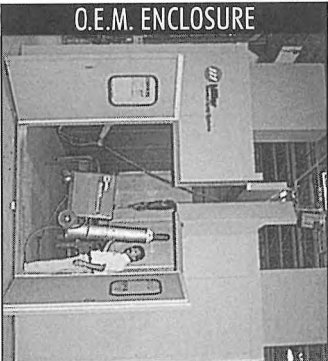
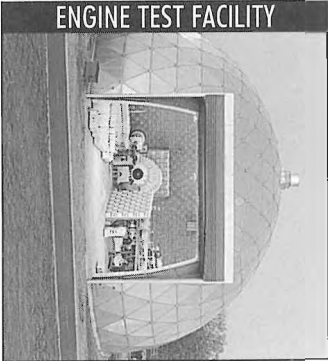
The unit can be programmed to start and stop automatic measurement at any preset time, allowing simultaneous measurement at multiple points.

We also offer experienced technical support, including instrument calibration. For more information or to place an order, call the number below, right now. You'll get good vibrations from our service, too.

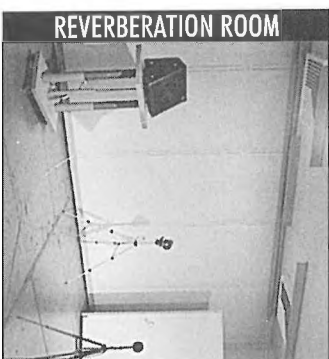
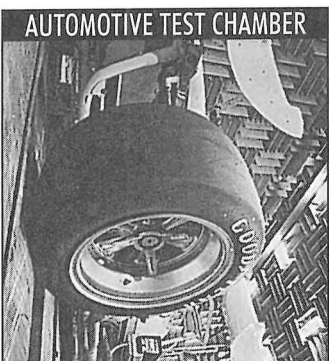
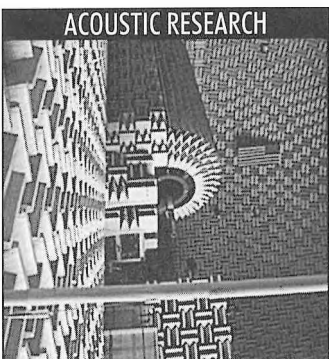
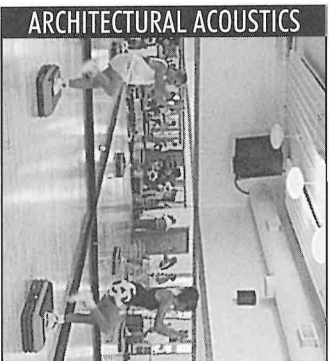
Scantek has all the latest in high quality sound and vibration instrumentation. For sale. Or for rent. Take the new NL-06 integrating sound level meter. It's destined to become a new standard for environmental sound level measurements.

The NL-06 easy-to-read display covers a wide 100 dB dynamic range eliminating the need

Scantek
Sound and vibration instrumentation
and engineering
Call: 301.495.7738
Fax: 301.495.7739 • E-mail: scantek@erols.com



SOUND SOLUTIONS FOR THE FUTURE



ECKEL

NOISE CONTROL TECHNOLOGIES

CANADIAN OFFICE

Box 776 100 Allison Avenue Morrisburg ON K0C 1X0
 Tel: 613-543-2967 800-563-3574 Fax: 613-543-4173
 Web site: www.eckel.ca/eckel e-mail: eckel@eckel.ca

ECKEL

NOISE CONTROL TECHNOLOGIES