

BUSINESS PLAN

CEN/TC 231

"Mechanical vibration and shock"

EXECUTIVE SUMMARY

Business Environment

- In Europe, a large number of machines generating exposure to mechanical hand-arm-vibration and/or whole-body-vibration and shock at work;
- Legislation in Europe: Machinery Directive (MD), Personal Protective Equipment Directive (PPED), Physical Agents Directive (Vibration) (PAD), General Product Safety Directive (GPSD);
 - MD contains essential health and safety requirements for design of machinery;
 - PPED contains requirements regarding the characteristics of PPE, e. g. gloves;
 - PAD (Vibration) contains requirements regarding the daily exposure limit values and action values at work and regarding necessary actions to minimise risks to safety and health of workers;
 - GPSD contains safety requirements regarding consumer products.
- Parties involved:
 - Manufacturers of machinery, PPE, etc.;
 - Users of machinery, PPE, etc.;
 - Health and safety inspectors;
 - Technical consultants and supervisors;
 - Testing laboratories and certification bodies;
 - Market surveillance authorities.

Benefits

- In the field of machinery safety, to elaborate harmonised standards giving presumption of conformity with regard to the MD and to provide guidelines to C-committees for drafting of their specific clauses on vibration. Since 1990, more than 40 standards were adopted;
- In the field of personal protective equipment (e.g. antivibration gloves) and isolation of people against vibration (e.g. seats), to elaborate standards describing methods to verify protection and isolation characteristics. Six standards were adopted;
- In the field of exposure at the workplace, to elaborate standards and reports giving the basis for the evaluation and assessment of risks to safety and health of humans exposed to vibration at work and in other environments;
- Reports are elaborated to describe the effects of vibration on health and to provide guidelines for hazards minimisation and/or reduction for hand-arm vibration and whole-body vibration.

Priorities

- To complete the current work programme
 - with regard to outstanding measuring methods, e.g. due to new digital and miniaturised technology;
 - with regard to amend the current standard on seat testing by requirements improving the reproducibility of the method and by specification for dynamic dummies;
 - with regard to measuring methods for the vibration emission of hand-held and hand-guided machines in accordance with the basic type B standard (EN ISO 20643) and with regard to the new Machinery Directive (2006/42/EC)
- To review the existing standards and to update them, with regard to the new Machinery Directive (2006/42/EC).

1 BUSINESS ENVIRONMENT OF THE CEN/TC

1.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal, societal and/or international dynamics describe the business environment of the industry sectors, products, materials, disciplines or practices related to the scope of this CEN/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

Political and Legal Factors

The Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery and amending Directive 95/16/EC (recast) contains in Annex I essential health and safety requirements. Vibration is one of many hazards which are covered by the general requirements; additionally, the requirements of the following clauses of Annex I apply specifically to vibration: 1.1.8, 1.5.9, 1.7.4.2, 1.7.4.3, 2.2.1.1, 3.6.3.1.

In order to assist manufacturers to prove conformity to these essential requirements and to allow inspection of conformity, CEN/TC 231 provides general standards (Type B standards) and guidelines, which enables product-related committees to deal with the health and safety aspects of vibration. Specifically, the information given in the instruction handbook of a machine should enable employers/users to select working equipment and manage its safe use without or with minimised risks to health also with regard to vibration.

The Directive 2002/44/EC of the European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration) lays down "minimum requirements for the protection of workers from risks to their health and safety arising or likely to arise from exposure to mechanical vibration". In order to assist employers, safety engineers, health surveillance experts and consulting services to determine and to assess these risks, CEN/TC 231 provides standards and Technical Reports on the determination and assessment of risk induced by occupational exposure to vibration. CEN/TC 231 provides also standards and Technical Reports addressing measures and options for prevention of risks to safety and health at work.

Economic factors

The European internal market provides economical advantages if the rules and conditions are equal or comparable. A high safety level reduces the national economical expenses for occupational and non-occupational diseases, rehabilitation and invalidity. The competition regarding safety at work will be supported and it will support the implementation of effective and practical solutions.

Technical factors

New technologies and work processes can be assessed regarding the health and safety risks due to vibration exposure. Small and medium enterprises (SMEs) receive guidelines for the application of progressive prevention techniques.

Societal and/or international dynamics

The TCs work provides contributions, not only to provide a framework for health and safety of each worker exposed to vibration at work, but also to a minimum basis of protection for all workers in the European Union in order to avoid possible distortions of competition.

1.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the CEN/TC.

Quantitative figures are not yet available in the European Union. But the following machines and tools have been listed in the report "Workplace exposure to vibration in Europe: An expert's review", EU OSHA (European Agency for Safety and Health at the Workplace), Bilbao, 2008, for which a survey of measurements were made regarding vibration exposure, which is further on valid.

- Machines exposing people to hand-transmitted vibration at the workplace:
 - Tools used in forestry and agricultural works (e.g. hand-guided mower with shears, barking machines, brush saws, chain saws);
 - Vibrating hand-held tools (e.g. concrete plate compactor, hammer drill, straight grinder, angle grinder, swing frame grinder, vibration sander, polisher, nibbler, impact drill, impact wrench, needle gun, riveting hammer, chipping hammer, breaker).
- Machines exposing people to whole-body vibration at the workplace:
 - Off-road vehicles (e.g. backhoe loader, grader, road roller, off-road truck, dumper, scraper, off-road forklift truck, wheel loader, track-type loader, bulldozer, excavator, lawn mower, agricultural and forestry tractor);
 - Industrial vehicles and machines (e.g. forklift truck, articulated truck, mobile crane).

Occupational disorders addressed by the PAD (Vibration) are not yet completely accepted in every member state of the Community as compensated occupational diseases. However, it is acknowledged that whole-body vibration contributes to the economically significant musculo-skeletal disorders. These diseases are acknowledged in most of the member states.

Diseases of the muscular/bone structure, neurological and vascular disorders arising from exposure to hand-transmitted vibration are also acknowledged as occupational diseases in the majority of the EU member states.

Expenses relating to prevention measures, medical treatment, rehabilitation and compensation are estimated to be very high. Statistical figures are available on national level, but not yet available in the EU as systematic statistic survey.

2 BENEFITS EXPECTED FROM THE WORK OF CEN/TC 231

Benefits expected from the work of the TC are:

- Enabling manufacturers to provide users with comparable information on the magnitude of vibration emission characteristics of machinery;
- Enabling employers to select work equipment, procedures and methods so as to give priority to reducing the vibration at source;
- Enabling manufacturers, specifically SMEs, to apply the basic principles of vibration reduction design;
- Giving employers, safety engineers, health surveillance experts, consulting services etc. methods to determine the vibration exposure, assess health risks at work and measures and options for the prevention of these risks.

3 PARTICIPATION IN CEN/TC 231

All the CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as observers of recognised European or international organisations is also possible under certain conditions. To participate in the activities of this CEN/TC, please contact the national standards organisation in your country.

4 OBJECTIVES OF THE CEN/TC 231 AND STRATEGIES FOR THEIR ACHIEVEMENT

4.1 Defined objectives of the CEN/TC 231

For the limitation of expenses for the determination of the health risk required by the PAD (Vibration), in particular for SMEs, a project of high importance was initiated: The development of guidelines for the assessment of exposure to hand-transmitted vibration based on information provided by manufacturers of machinery or by other sources. This project should enable employers and safety engineers to determine and to assess the risk for health and safety of workers at the workplace avoiding expensive measurements, see PAD (Vibration), Article 4 (1). The project was also aimed at guaranteeing an accepted level of quality of the activities of consulting services which may be required for the assessment.

As result of this project the revised edition of CEN/TR 15350 "Mechanical vibration - Guideline for the assessment of exposure to hand-transmitted vibration using available information including that provided by manufacturers of machinery" was published. The update of the tables of this TR with regard to new measurement methods for hand-held and hand-guided machines will be a project in the future.

After completion of the main projects related to measuring methods of hand-arm (HA) vibration and whole-body (WB) vibration, emphasis will be given to develop and finalise guidelines for employers for selection of vibration reduced machinery and for estimation of the exposure to vibration at the workplace.

Importance is also given to the projects to amend the current standard on seat testing with regard to improve the reproducibility and by specifications for the use of dynamic dummies. However, the development of suitable dummies is complex and, therefore, more experience is needed and experts are requested to contribute more data.

As a consequence of the new basic measuring standard for hand-arm vibration for all hand-held and hand-guided machines independent of the type of power source, all specific measuring methods for these kind of machines are to be updated and harmonised. Also, new experience on better practice-related operating conditions is to be taken into consideration when revising these methods. This development has mostly been accomplished.

Specific questions, e. g. the evaluation of shocks emitted by fastener driving tools or the influence and consideration of the coupling forces of the hand to a vibrating surface (grip or handle of a machine), will be dealt with in co-operation with ISO/TC 108/SC 4.

The need of European standards should be considered with regard to implement the preventive aspects, i.e. methods to measure and interpret the vibrotactile perception thresholds for the assessment of nerve dysfunction (ISO 13091) and methods to assess peripheral vascular function by means of cold provocation tests (ISO 14835).

4.2 Identified strategies to achieve the CEN/TCs defined objectives

Use of ISO standards, specifically of ISO/TC 108/SC 4 and ISO/TC 118, development of standards in parallel with ISO (according to the VA), in total 23 standards were published jointly with ISO. Two projects are under development, one of these are in parallel with ISO.

Only in specific cases, i. e. the reports on hazards reduction of whole-body vibration and on guidelines for the assessment of exposure to hand-transmitted vibration based on information provided by manufacturers of machinery, projects are developed as purely European projects. However, ISO will be kept informed about the ongoing activities and observers are appointed to follow the work. In total CEN/TC 231 published six pure European standards and nine Technical Reports and Technical Specifications (CEN/TR, CEN/TS).

4.3 Environmental aspects

While CEN/TC 231 is not usually directly responsible for product standards, the TC collaborate with other CEN and ISO committees on the development of standards for product testing. CEN/TC 231 shall work with those other working groups to ensure environmental aspects of these standards are suitably considered in line with CEN Guide 4 or ISO Guide 64.

5 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE CEN/TC WORK PROGRAMME

The limited number of experts participating in the work due to economical restrictions is a permanent risk for time delays of projects and a cause for the diminished possibility to develop a number of projects in parallel in the TC, respectively.

An additional problem represents the criterion for the approval of new work items, that at least five member bodies agree to participate actively in the work. Although there was no proposal for a new work item in the past, which failed, there are some cases for which it was difficult to achieve the necessary number of five active members. The reason might be that only a few member bodies had the very specific expertise and experience necessary for such projects.

CEN only allows the reduction of the number of active participants to a New Work Item Proposal in the exceptional case. This needs officially a resolution from BT and a detailed justification from the TC.

It is still another problem that the input from manufacturers and users is sometimes not sufficient although the TC needs the expertise of these groups if the project is related to specific methods for measuring of vibration and development and application of new techniques of vibration reduction.