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Regulatory cooperation, Sectoral projects

Progress report on the sectoral initiative on earth-moving machinery

Note by the secretariat¹

Summary

Excavators, wheel loaders and other earth-moving machinery need to be safe in order to protect workers from potential hazards. ISO standards have long been used in this sector as the basis for national safety standards and as the technical requirements for complying with regulations. However, more countries are adding regulatory requirements as well as requirements for repeated testing and lengthy conformity assessment procedures, thereby adding unnecessary cost and time delays.

In 2003, the Working Party set up a sectoral initiative to reduce technical barriers to trade in this sector while preserving safety and reliability of equipment. In 2004, the Working Party adopted a first model regulatory framework, which was revised in 2009. In 2010 the EMM project initiated a model certificate of conformity that, if broadly adopted, would simplify the exchange of data between the producers, machine users, third-party certifiers and the authorities of exporting and importing countries.

In 2011, the EMM Project began adding “Risk Management” and “Market Surveillance, which had not considered in the project.

The progress report is submitted to the Working Party for discussion and for noting.

¹ At its eighteenth session, the Working Party asked the secretariat to provide annual updates on the work of all the sectoral initiatives (ECE/TRADE/C/WP.6/2008/18, para. 63).

I. Project objective and key deliverables

1. In order to protect workers from potentially serious hazards, machinery such as excavators, wheel loaders and other earth-moving machinery needs to respect strict safety requirements. Both industry and Governments have been actively developing and implementing best practice and international standards, especially in the context of the Technical Committee 127 of the International Organization for Standardization (ISO/TC 127).
2. ISO standards have long been used as the basis for national standards in all major markets. However, more countries are adding regulatory requirements, as well as requirements for repeated testing and lengthy conformity assessment procedures, which inflate prices with no real gain in safety and quality of the traded equipment.
3. In 2003 the Working Party set up a Sectoral Initiative to reduce technical barriers to trade in this sector while preserving safety and reliability of equipment traded internationally. The Working Party approved the first version of the Common Regulatory Objectives (CROs) for the safety requirements of earth-moving machinery in 2004 and a revised version in 2009. In 2010 project initiated a model certificate of conformity that, if broadly adopted, would simplify the exchange of data between the producers, machine users, third-party certifiers and the authorities of exporting and importing countries.
4. In 2011, "Risk Management" and "Market Surveillance" were recognized as important considerations for EMM safety and are being evaluated as addition to the EMM Project. Market Surveillance was not considered in the project and Risk Management is a new area that is also important for EMM.

II. Current status of project

5. Since 2004, an international team has been promoting the general principles of the project in China, Russia, India, Korea, South Africa, and parts of South America. It has been doing so both by promoting the adoption of the ISO/TC 127 standards as national standards and by recommending that countries use standards as the basis for technical regulations. Since most countries generally adopt the ISO/TC 127 standards as their national standards, the CROs were broadly considered as acceptable.
6. The compliance clause in the CROs of 2004 allowed for conformity assessment only through the use of a supplier declaration of conformity (SDoC). This, however, failed to meet the requirements of some of the developing countries, where SDoC is not considered a suitable tool for this sector.
7. The CROs were therefore revised and they now allow for manufacturers to avail themselves of the services of external certifiers. This encourages the manufacturer and the third party to work within a stable framework, so that testing that has already been done by the manufacturer can be used by the third party, within specific guidelines. The end goal of the process should be to build capacity at the manufacturer's premises, so that ultimately the SDoC becomes the alternative of choice.
8. A revised version of the CROs - approved by the Working Party at its annual session in 2009 (see ECE/TRADE/C/WP.6/2009/19, para. 36) - is available as an annex, see ECE/TRADE/C/WP.6/2010/11.
9. In 2010 the EMM project initiated a model certificate of conformity to respond to requests that manufacturers receive for compliance and certification in many areas. A common certificate could benefit customers, government officials and manufacturers.

III. Project meetings and/or conference calls held in 2011

10. The Earth-Moving Machinery Task Force exchanged information informally by email throughout 2011.

IV. Progress in 2011 and deliverables for the annual sessions

11. The Project is developing a model certificate of conformity based on best practice in this and other sectors. If broadly adopted, the model certificate would simplify the exchange of data between the producers, machine users, third-party certifiers and the authorities of exporting and importing countries. At the 2010 annual session, a general global certificate (also available as an annex, see ECE/TRADE/C/WP.6/2010/11) was presented that can be used to certify conformity to regulations and standards, to confirm country of origin and date of manufacture, and to certify quality as well as other specific customer needs for compliance. Development of the model certificate is continuing.

12. In 2011 the project recognized the need to also address risk management and market surveillance to achieve the EMM goal of zero injuries for machine operators and other workers. Not only must machines be designed to address safety risks, the additional risks on the work site need to be addressed. And work sites need a surveillance plan to ensure that machines are maintained and used safely. Work is continuing to add both risk management and market surveillance to the EMM initiative. A summary of the EMM safety process to achieve the goal of zero injuries is included in Annex B. The process has eight steps that include: identifying risks, creating ISO standards to address the risks, using the technical requirements from the standards for regulations, conformity assessment process, certification of conformity, work site risk management, worksite surveillance, and achieving the goal of zero injuries. The initiative is continuing to integrate risk management and work site surveillance and plans to have this completed in 2012.

V. Responsibility for the continuation of the work

13. The Earth-Moving Machinery Project Task Force consists of the following people:

- Dan Roley (United States of America) – Convener
- Yoshie Ideura (Japan)
- Stefan Nilsson (Sweden).

VI. Role of the secretariat

14. The Task Force expects the secretariat to keep the website updated and to assist the Convener in maintaining and developing contacts with Governments to promote the project.

Annex A

Safety Process for Earth-Moving Machines

1. The common goal for earth-moving machine (EMM) users, health and safety groups, and machine manufacturers is zero injuries for machine operators and the people on work sites. To achieve this goal, EMM must be developed so that they can be used safely and the work site must have a safety plan for machines and people to work together safely. The safety process for EMM to achieve the safety goal of zero injuries is summarized below:



2. The safety process starts by defining the safety risks and developing safety standards that define acceptable safety performance levels to address the risks. This is done in ISO/TC 127 with the cooperation of machine users, health and safety organizations, and machine manufacturers.

1. ISO/TC 127 Standards Adoption Process

General ISO/TC 127 Objectives and Process:

3. ISO/TC 127 develops international standards to meet the need for global standards for earth-moving machines. The objectives and process for ISO/TC 127 are to:

(a) Create and maintain a complete set of International standards to address all safety risks and commercial needs for earth-moving machines to promote global harmonization of machine requirements;

(b) Define acceptable safety performance requirements for all safety risks to meet the needs and expectations of customers, health and safety organizations, and regulators;

- (c) Promote the use of the ISO/TC 127 standards as national standards and as the technical requirements for national regulations;
- (d) Provide training and assistance for:
 - understanding the ISO standards process
 - participating in the development of ISO/TC 127 standards
 - adopting the ISO standards as national standards
 - using the technical requirements in the ISO/TC 127 standards for national regulations.

Process for Developing Countries

4. About 10 years ago ISO/TC 127 recognized that the ISO/TC 127 standards define safety levels that exceed the current technical capability and cultural demands for safety for developing countries. A process was initiated to encourage participation in ISO/TC 127 by developing countries and to enable developing countries to more effectively use the ISO/TC 127 standards.

5. To facilitate the adoption and use of the ISO/TC 127 standards by developing countries, ISO/TC 127 implemented the following:

(a) An ISO 20474 General Machine Safety Standard that references all of the ISO/TC 127 safety standards in a single standard;

(b) A general guidance document for adopting ISO 20474 as the national safety standard for earth-moving machines. This document recommends that developing countries:

- adopt ISO 20474 as the national safety standard
- during the adoption process, evaluate the need for all of the requirements in ISO 20474, consistent with current technology levels and cultural expectations
- identify some of the requirements in the national standard as voluntary or optional for the short term to accommodate technology level and safety expectations.

(c) Training seminars for developing countries to provide guidance for national adoption of the ISO 20474 standard, with information to help identify requirements that should be evaluated and potentially adopted as voluntary or optional national requirements for the short term.

6. This approach benefits national manufacturers who want to market machines internationally by defining the global requirements for selling machines. It also allows the nationally adopted ISO 20474 safety standard to recognize current levels of technology, customer expectations, and social customs by allowing some of the global requirements to be voluntary or not applicable.

7. The intent is that all countries can use this general safety standard as the basis for national standards and also use the content of this safety standard as the technical requirements for national regulations to promote global harmonization of regulations for earth-moving machines.

2. Conformity Assessment and Certification for EMM

8. The best practice is to allow manufacturers to do their own conformity assessment testing and declaration of conformity certification, defined as supplier's declaration of

conformity (SDoC) in ISO 17050-1. ISO/TC 127 standards define test methods and performance criteria that manufacturers can use for conformity assessment testing and certification. EMM manufacturers verify compliance with standards and regulations during the machine development process and can certify machine compliance using SDoC.

Machine Conformity Assessment Challenge

9. Some countries require third party certification because manufacturers:
 - do not have expertise to do SDoC
 - do not have test facilities for SDoC
 - are not trusted to do SDoC.
10. Third party conformity assessment and certification is appropriate for these countries. The long term goal is SDoC, but third party conformity assessment and certification may be necessary for the short term for developing countries. To minimize the cost and time required for third party certification, testing done by manufacturers should be accepted by the third party, if it is properly done.

Conformity Assessment Testing

11. Conformity assessment testing already completed by the manufacturer should be accepted for third party certification, if the manufacturer has the following:
 - a quality plan that is at least equivalent to ISO 9000
 - a documented conformity assessment process
 - a conformity assessment group to manage the conformity assessment
 - access to conformity assessment facilities (manufacturer's facility or independent test labs)
 - documentation of test results.

Certification of EMM

12. Manufacturers are asked to certify many areas for EMM:
 - standards compliance
 - regulations compliance
 - quality process
 - country of origin
 - date of manufacturer
 - compliance with specifications
 - sustainability Information.
13. A simple generic certificate could simplify the certification process for manufacturers and help machine users and customs people recognize official certificates – see the example global certificate on the last page.

3. Work Site Risk Management and Surveillance for EMM

14. Manufacturers of Earth-Moving Machines perform risk analysis to address all safety risks. To complete the risk management, users of machines should also do a risk analysis

for the additional risks on the work site. The information below provides guidance for the work site risk management process and for preparing the appropriate work site organization (rules and procedures for the jobsite that coordinate machines and people safely working together) to address the risks.

Machine Risk Analysis

15. The ISO/TC 127 Safety Standards define acceptable safety performance levels for all safety risks for earth-moving machines. These performance levels are summarized in ISO 20474. This standard also defines the information that should be included in the machine operations manual to define machine intended use and guidance to the operator for safe machine operations. The machine operations manual can be used as the summary of the risk evaluation for earth-moving machines.

Work Site Risk Analysis

16. The specific risks on the work site also need to be evaluated to address additional risks for machines and people on the work site. These risks include:

- risks for Machines and the Operator: Underground (gas lines, electrical cables), Overhead (Structures, electrical lines), Terrain Conditions (steep, slippery, soft), Other Machines or Vehicles on the Work Site
- risks for Other People: Other Workers, General Public, Children on the work site.

Work Site Organization

17. Each work site should have rules and procedures that will allow machines to work safely with other machines and with other workers or people on the work site. These should cover the routine procedures as well as the specific rules and procedures to address the work site risks, such as:

- operator and worker training
- machine maintenance
- appropriate size and type of machines
- communication process between workers
- traffic patterns and restricted areas.

Work Site Surveillance

18. The work site organization plan should include provisions to verify that the plan is being implemented properly. Machines need to be maintained, workers need to be trained and need to follow the work site rules and procedures. The work site safety or project leaders should continually assess and take responsibility for work site surveillance. Some governmental agencies may also have responsibility to perform work place surveillance to assist machine users.

4. Summary

19. Achieving the goal of zero injuries requires the cooperation of machine users, manufacturers, and health and safety experts to:

- define reasonable and realistic safety performance levels to address safety risks (done by all groups)

- develop machines that comply with the safety performance levels (responsibility of manufacturers)
 - develop and follow the appropriate work site organization plans to address risks and allow machines and people to work together safely (responsibility of machine users).
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