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# Earth-moving machinery — Electromagnetic compatibility

*Engins de terrassement — Compatibilité électromagnétique*

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# Contents

Page

## Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 13766 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety requirements and human factors*.

This second edition cancels and replaces the first edition (ISO 13766:1999), which has been technically revised.

# Introduction

With the increasing use of electronic devices in areas where earth-moving machinery operates, there is a need to ensure that earth-moving machines are provided with adequate immunity to external electromagnetic fields. As more machines are fitted with electrical and electronic devices, it is necessary to ensure that the emissions of electromagnetic fields from the machines meets acceptable limits.

Electrical and high frequency interference emerge during the normal operation of many parts of an earth-moving machine's devices and systems. They are generated within a large frequency range, with different electrical characteristics and, by conduction and/or radiation, can be imparted to other of the machine's electrical/electronic devices and systems. Narrowband signals, generated by sources of interference inside or outside the machine, can also be coupled in electrical/electronic systems whereby they can influence the normal function of electrical/electronic devices.

Electrostatic discharges are relevant to earth-moving machinery because control elements can be positioned outside the operator's station and potential differences can emerge at contact points. Conducted transients in power supply wiring have to be taken into account because earth-moving machinery often represents open systems and several devices and/or components are combined with one another.

While there are many existing standards for a variety of products and systems, the test method presented in this International Standard provides for the specific test conditions of earth-moving machinery and the "electrical/electronic systems or electronic subassemblies" of earth-moving machines. The test method recognizes that because of the size and usage of earth-moving machinery, the arrangement of the machines in the test facility needs to be responsive to the operating characteristics of these types of machines. This International Standard provides test methods and criteria which are acceptable for earth-moving machinery, considering its unique characteristics and operating parameters.

Because earth-moving machines possess a number of systems that consist of components that can be used on a number of different types of machines, the approach of defining "electrical/electronic systems or electronic subassemblies" for these components is applied for the immunity and emissions test methods. This allows these components to be evaluated by the test method in existing laboratory facilities consisting of specially equipped shielded rooms. When electrical/electronic systems or electronic subassembly tests are conducted, it is necessary to consider the effects of the wiring systems used to connect the subassemblies into the earth-moving machinery. The tests may also be conducted on the machines.

This International Standard is intended to provide the necessary technical specifications for evaluating the electromagnetic performance of earth-moving machinery with respect to government electromagnetic performance laws, directives, rules and/or regulations. Such an example is the European Directive 2004/108/EC.