

Systematic Test & Evaluation of Metal Detectors

Up-to-date and accurate information on available technology is urgently needed to help Mine Action Centres (MACs) and donors in the planning of demining activities and in the selection of the best-suited type of demining equipment. For this reason, the European Commission (EC) is starting a project to evaluate the performance of metal detectors on the market today.

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Background

Metal detectors are widely commercially available and are still the main tool used by deminers for manual demining activities. The International Pilot Project for Technology Co-operation (IPPTC) performed a large-scale metal detector trial, producing a "consumer report" for users.¹ IPPTC established many principles for metal detector testing and identified the need for standardized tests to be agreed upon internationally. The United Nations Mine Action Service (UNMAS) has performed tests of metal detectors in the past, in order to assess their suitability for specific regions like Afghanistan.² The Geneva International Centre for Humanitarian Demining (GICHD) publishes a catalogue on metal detectors annually,³ but data is mainly provided by the manufacturers without being independently assessed. A European Centre for Standardization (CEN) Workshop Agreement (CWA) has been internationally reached on the test & evaluation (T&E) of metal detectors, published in July under the following reference CWA14747:2003.⁴

It is now the time to run a systematic test campaign in order to assess the capabilities of the different available metal detectors. Such a project, funded by the EC, has just been launched to measure the performance and weaknesses of metal detectors, using the agreed standard test procedures.

Objectives

The first objective is to enable mine action programme managers to make informed choices over metal detector selection. The second objective is to publicize the CWA and to achieve good understanding by metal detector users of the advantages of standardized testing and the ideas that the CWA introduces. In particular, we need to encourage those that may test metal detectors to use the tests specified in the CWA. Third, it is important to stimulate users of metal detectors to provide feedback on the CWA and to suggest improvements for a future issue of the CWA. The fourth objective is the publication of independent and objective test results that can be used to update future issues of the GICHD metal detector catalogue.

Test Campaigns

The best way to publicize the CWA and collect feedback is to run trials using the CWA protocols and involving metal detector users at the different national MACs as well as those employed by non-governmental organizations (NGOs) and commercial companies. The EC Joint Research Centre (JRC) plans to organize T&E campaigns following a two-stage approach:

- **First stage:** Under laboratory conditions, using the JRC facilities in Ispra, we will run tests on a wide range of metal detectors using the CWA protocols. We will run the test campaigns together with other international partners in order to assess the capabilities of off-the-shelf new detectors. In particular, we will monitor the following:
 - The immunity and performance under environmental stresses (vibration, temperature, moisture and electromagnetic compatibility).
 - The logistics and ergonomics aspects (dimensions, weight (balance, moment of inertia), battery life, setup, alarms, transport case, etc.).
 - The detection capability with specific soils and mines.
- **Second stage:** The JRC will facilitate in-field tests in several mine-affected regions (e.g., southeast Europe, southern Africa, etc.), under realistic conditions using the CWA protocol, using the same metal detectors as during the first stage as well as metal detectors already in use in each region. This opportunity will be used to collect environmental data influencing the suitability of metal detectors (characteristics of soils and mines, temperatures, vibrations, etc.). Personnel of local MACs and locally active demining NGOs will be invited to follow the tests. User feedback will be collected for submission to CEN Workshop 7, in order to produce an updated version of the CWA.

Partnership

The core partners of the proposed project will be UNMAS, the GICHD, the JRC and regional MACs, etc. All members of the International Test and Evaluation Program (ITEP) will be invited to participate actively in the tests. Furthermore, the experts already involved in contributing to the process of the CWA will be invited to participate. The results of tests will be used to update the metal detector catalogue produced by the GICHD under mandate of the United Nations.

References

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3. *Metal Detectors Catalogue 2003*, GICHD, February 2003, ISBN 2-88487-009-1.
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