

## “Standards” for T&E of Demining Machines for Mine Action



Geneva International Centre for  
Humanitarian Demining



SWEDEC



HRVATSKI CENTAR ZA RAZMINIRANJE  
CROATIAN MINE ACTION CENTER



Swedish Standard  
Institute

- **NGO, GO, Others**
- **Manufacturer**
- **Test Institutes**



European Committee for  
standardization



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## BACKGROUND

### CEN Workshop Agreement (CWA)

- Funded partly by European Commission (EC)
- Procedure CWA
- Business plan adopted at the Kick-off in Brussels in June 2003
- Three meetings in autumn 2003 in Sweden and Croatia



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## AIM

- **Comparable test result for equipment concerning**
  - ◆ **Performance and survivability**
  - ◆ **Suitability in different environment**
- **CWA to be proposed to IMAS Revision Board for inclusion into IMAS**



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## Solutions



- **Pre-test conditions**
- **Pre-trial assessment**
- **Performance test**
- **Survivability test**
  - **Machines**
  - **Operator**
- **Acceptance test**
- **Agreed test targets**



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## Pre-test conditions (provided by the manufacturer)

- Weight, size, slopes capabilities etc.
- Consumption of fuel, spare parts, etc.
- Clearance speed
- Records of machine in operation, for 6 consecutive days 8 hour/day



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## Performance Test (will not replicate real conditions)

- Comparable results of clearance capability
- Controlled conditions, three types of soil  
(gravel, sand, topsoil)
- 150 targets in each soil type
- Three different depth, flush to surface, 10, 20 cm
- Demonstrate the capability to cut vegetation



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## Survivability test

### Machine

- Testing of the blast effect on the mine clearance tool
- Testing with live/simulated AP mines (240 g explosives) and AT mines (8 kg explosives)



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## Survivability test

### Operator

- Verification of the survivability of the operator after an AT-mine detonation.
- Measurement of overpressure in internal organs and accelerations of feet and spine
- Displacement of the operator and estimated injuries due to this, i.e. potential head injury



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## Acceptance test

- Testing under local and controlled conditions in a live mine field.
- Machines are driven against 20 AP and 5 AT mines
- Based on CROMAC methodology
- Vegetation classified in four categories
- Adapted to national safety regulations



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## Test Targets

- Shape
- Size
- Weight
- Function
- Explosives



- Explosives**
- AP Mine 0,24 kg
- AT Mine 8 kg

- Live Mine Targets (LMT) production mines fully functional
- Surrogate Mine (SUM) specific mine type
- Simulated Mine (SIM) generic categories of mines



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