

Report on the Demonstration of Mechanical Mine Clearance Tools - Demining Symposium 2007 in Sibenik, Croatia -

General

Based on findings from the previous International Symposium in 2006 and considerable international interest in mine clearance machine usage in the process of demining, this demonstration was organized to demonstrate and compare machine performances.

The event was hosted by the Croatian Mine Action Center (CROMAC) and the Center for testing, development and training (CTRO).

Objective

Using the framework of the International Symposium and realistic conditions of the soil (first category: little vegetation, slight slope), the objective was to demonstrate the following:

- machine performance in two runs on the 50m lane
- machine movement speed
- soil treatment depth – print on masonite boards

Another test element was the usage of simulator mines¹. There was no comparative analysis conducted on this feature.



Testing area (30.000m²)

Participants

Around 200 representatives from various organizations and countries were witnessing the demonstration. Among those were

- 1) Military and Government Officials, e.g.
 - EUFOR
 - USA
 - Iraq
 - Afghanistan
 - Colombia
 - Chile
 - Switzerland
 - Japan

1) Please refer to www.itep.ws/pdf/WORMBrochure_LowResolution.pdf for further information

- Jordan
 - Croatia
- 2) Non Government Organisations (NGOs), e.g.
- Mines Advisory Group
 - Norwegian People's Aid
- 3) Supranational Organizations, e.g.
- UNDP
 - UNMAS
 - GICHD
 - ITEP
- 4) Various Commercial Companies



Spectator's stand



Intensive discussions after the demonstration

Demining Machines

The following machines were demonstrated (manufacturer and country of origin in brackets):

- MineWolf (MineWolf Systems, Switzerland)
- RM-KA 02 (Duro Dakovic, Croatia)
- Bozena – 5 (Way Industry, Slovakia)
- Samson 300 (Vilpo, Slovenia)
- MV-10 (Dok-Ing, Croatia)
- M-FV 2 500/770 (Hydrema, Denmark/Croatia)
- Mini MineWolf (MineWolf Systems, Switzerland)
- MV-4 (Dok-Ing, Croatia)

- Bozena – 4 (Way Industry, Slovakia)
- MineWolf Bagger (MineWolf Systems, Switzerland)

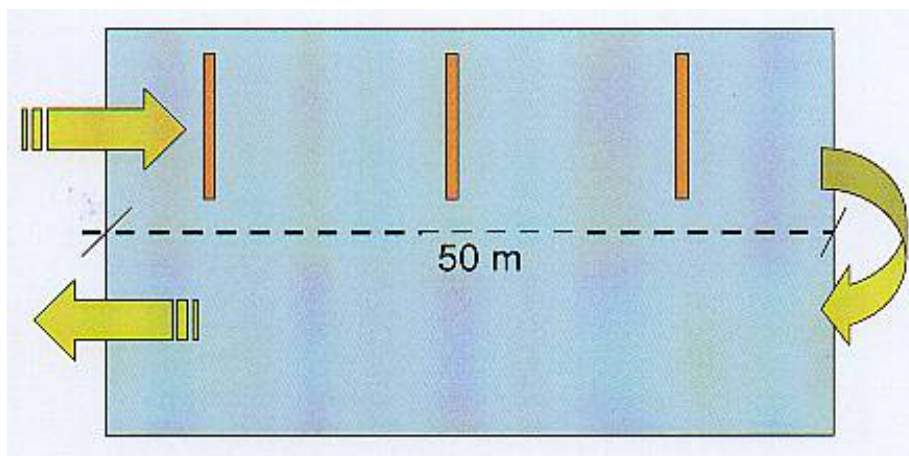


Mine Clearance machines before demonstration

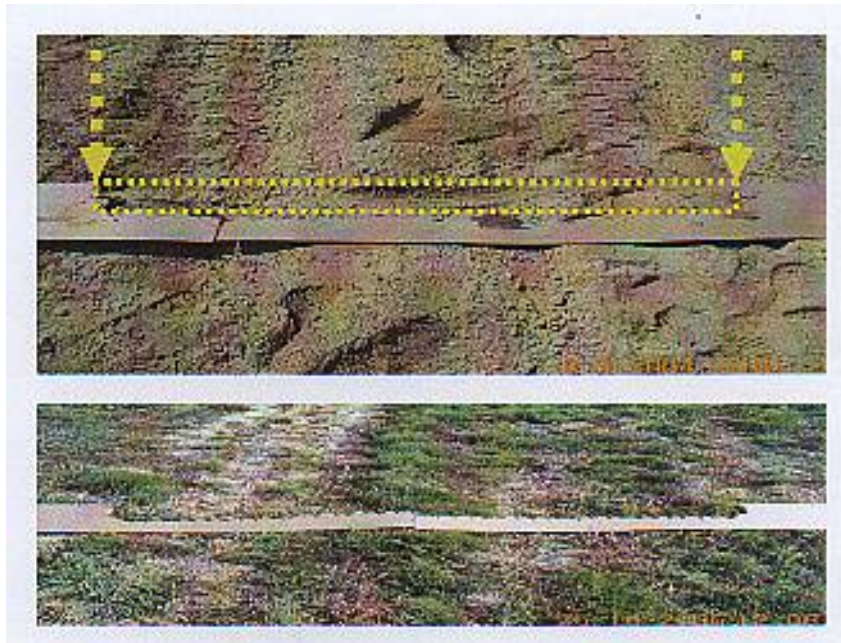
Testing Procedure

The following parameters were defined for the testing process:

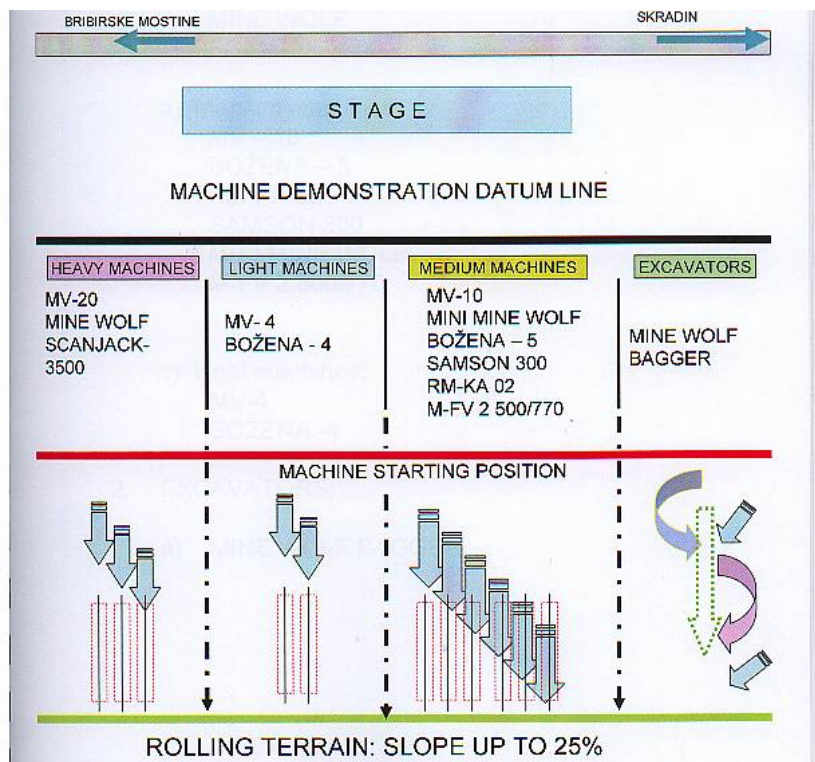
- The machines were divided into three categories (heavy, medium, light) based on their respective weights
- The machines were to clear two runs of a 50m lane
- Several masonite boards were planted in the soil to measure the clearance depth, the number of boards depended on the machine category (heavy: 5; medium: 8; light 10)
- Two simulation mines were planted in the first lane
- Each machine started separately, upon finalization of the first lane, the next machine started
- The time was measured for each lane cleared and for the time to turn the machine
- The machine performance was measured in m^2/h



Clearance lanes with planted masonite boards



Masonite boards with clearance profile



Testing procedure for different machine categories
(please note that the MV-20 and the Scanjack were withdrawn from the demonstration)

Test Results

The table below represents a summary of test results. The full report on the demonstration has been presented to the Symposium community and will be finally published in the official Symposium Documentation.

Machine Model	Total Time (min)	Average Depth (cm)	Average Speed (km/h)	Machine Capacity (m ² /h)
MineWolf	5m 35s	19.00	1.193	3,327.77
RM-KA 02	9m 50s	17.53	0.708	1,791.04
Bozena-5	16m 53s	25.06	0.374	975.00
Samson 300	11m 26s	12.14	0.562	1,367.57
MV-10	11m 25s	17.71	0.571	1,400.00
M-FV 2 500/770	13m 41s	15.25	0.492	962.14
Mini MineWolf	12m 39s	22.05	0.532	1,206.52
MV-4 ²	5m 33s ²	10.38 ²	0.540 ²	891.89 ²
Bozena-4	26m 10s	19.44	0.239	523.12

Summary of test results

Conclusion

- 1) The organizers followed a very strict testing procedure in accordance with international testing standards. This contributed to the overall results being regarded as representative under testing conditions.
- 2) The key observation was concerning the astonishing difference between the flail and the tiller; it became apparent in the case of the flail that under dry conditions the operations are heavily affected by limited visibility due to dust. As one delegation member remarked “seeing the tiller operating was a real eye opener”.



Samson 300 dealing with the dust

MV-4 struggling to stay on track

Tiller creates much less dust than the flail

- 3) The results of the clearance depth and the corresponding speed suggest that the depth correlates inversely with the speed.

- 4) The superiority of the MineWolf in terms of clearance capacity was indisputable amongst observers. It cleared the two 50m lanes in 5min 35sec which corresponds to an hourly clearance capacity of 3,328m². It was also acknowledged that having the machine manned adds to more control when operating.



MineWolf compared with the MV-10

- 5) The Mini MineWolf received very positive remarks for very good clearing results despite its compact size. The machine cleared constantly down to a depth of 20cm. The head of the Croatian Testing Institution (CTRO), Ivan Steker, commented positively on the “ideal results”.



Mini MineWolf

- 6) The MineWolf Bagger with its tiller attachment earned a lot of interest even though the machine did not participate in the demonstration. The concept of adding the tiller head and the powerpack to an existing armoured excavator was well received.



MineWolf Bagger