

Unexploded Ordnance

In 2004 HALO found the AIR-SPADE® to be ideally suited for safe excavation of anti-tank mines from road verges, which tend to be hard packed soil and aggregate.

Tests at Ft. A.P. Hill and Jefferson Proving Ground show an operator using the AIR-SPADE® can uncover UXO ranging from bullets to 152 mm shells with excavation rates of about 1/4 cu ft per minute.



Operator uses the AIR-SPADE® to clear ammunition pits near Kabul, Afghanistan.

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Concept Engineering Group Inc.

AIR-SPADE® Humanitarian Demining And UXO Equipment



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Humanitarian Demining



Sponsored by the Humanitarian Demining Program of the US Army at Fort Belvoir, VA, CEG has developed special equipment to efficiently and safely uncover buried land mines.

Extensive testing at Fort A.P. Hill, VA has shown the times to find and expose hundreds of anti-personnel and anti-tank training mines using the AIR-SPADE® to be significantly reduced over current practice.

Times to Find and Expose Land Mines

| Type | Find | Fully Expose |
|----------------|-----------|--------------|
| Anti-personnel | 5 seconds | 30 seconds |
| Anti-tank | 2 minutes | 6 minutes |

The AIR-SPADE® exerts less than 2 pounds of force on a buried mine, insufficient to set off even the very sensitive Russian PMN mine.

The AIR-SPADE® can also be used to clean mud and dirt from vehicles and equipment quickly.

The AIR-SPADE® also offers the deminer the ability to operate in metal rich environments where false indications may run as high as several thousand for each actual land mine.

With the help of the US Army, US Department of State, Belgium Military, and MgM Desminagem AIR-SPADE® systems have been or are being deployed to:

- Afghanistan
- Angola
- Belgium
- Cambodia
- Ecuador
- Korea
- Thailand



Since up to 70% of a deminer's time may be spent clearing brush, US Army Special Forces personnel have also found complimentary pneumatic pruning tools such as shears, saws, and brush trimmers to be very effective.



Equipment Specifications

AIR-SPADE® Demining Kit

- Series 2000 tool with 4 ft barrel and either 15 or 25 scfm supersonic nozzle
- 3 ft extension / reducer barrel
- 45° angle adapter
- Waterproof storage case with lock
- Five 50 ft light-weight air hoses

Air powered Maibo® brush tools

- ST-3-06 saw with 6 ft pole
- ST-5 brush cutter with steel and line blades
- SE-6B-06 shear with 6 ft pole

CEG Demining Cart (shown left)

- 2 wheeled man-cart designed to fit standard width demining lane
- 13 hp gas engine drives rugged piston air compressor at 28 scfm at 100 psig
- 30" w by 36" l by 28" h, 300 lbs
- Lightest weight unit of its capacity
- More air to run larger nozzle or smaller nozzle and brush tool together

WorldAire™ R1330GAS

- 2 stage, 2 cyl piston air compressor
- 13 hp gas engine, electric start
- Truck / trailer mount
- 19 scfm at 100 psig, 30 gal tank
- 20" w by 40" l by 50" h, 336 lbs
- Runs smaller nozzle or brush tool alternately

See www.conceptengineeringgroup.com for additional information

Future Developments

Sponsored by US Army CECOM, CEG is currently working with Carnegie-Mellon University to combine the AIR-SPADE® with infrared and electromagnetic detection onto a robotic platform.