

Providing safe, reliable, fast, and cost-efficient mine clearance solutions to the military, commercial, and humanitarian sectors worldwide

In German Army testing last year Mini MineWolf survived blasts of anti tank mines.

MineWolf Systems was founded in 2004 with the goal of accelerating the elimination of minefields through effective mechanical mine clearance technology. By introducing safe, reliable, cost-effective, and maintainable de-mining machines into mine clearance operations, the rate at which contaminated areas can be safely cleared has significantly increased.

Accelerating Mine Clearance Through Advanced Technology

Global Land Mine Problem

One of the most tragic legacies of war is the scourge of land mines; unlike other weapons, when war is finished, mines remain. Today over 70 countries in Africa, the Americas, Asia, Europe, and the Middle-East are contaminated with approximately 100 million land mines, resulting in thousands of deaths and serious injury each year. Victims are usually poor and least able to cope with the death of a breadwinner or afford the costs of rehabilitation. Over one-third of victims are children. The problem is also an economic one: even the suspicion of a mine can render an area unusable,

denying farmers use of their land, cutting off vital roads, and preventing post-conflict reconstruction.

Identifying and neutralizing minefields is a time-intensive and dangerous task. Even today with the availability of advanced technology, the most widely used method is decades old; manual de-miners with metal detectors and prodders together with mine-detection dogs. The process is painfully slow, and very risky.

MineWolf and Mini MineWolf

Mine-clearance machines have been in use for decades, but until recently have suffered from deficiencies in reliability,

transportability, cost, and safety, which prevented them from becoming a mainstream tool for humanitarian de-mining. MineWolf, a next-generation large-scale de-mining machine, and the Mini MineWolf, a smaller remote-controlled machine, have been designed to overcome these challenges through a combination of innovations:

- High reliability and operational independence: MineWolf machines are designed, tested and proven by the German Army to survive large AT mine blasts as well as destroy small AP mines with circumferences as small as 4 centimeters with no operational damage. Working tools, tiller or flail, are built to deflect blast energy, thus re-

stricting damage to a repairable minimum. A fully equipped mobile workshop provides de-mining teams with the ability to perform all necessary maintenance and blast repair tasks in the field, a crucial capability when deployed in remote regions with poor infrastructure.

- Transportability: Only when a de-mining machine is easily transportable to remote regions, as well as between de-mining sites does it make practical sense. MineWolf machines including support hardware are easily transported over great distances as well as between projects via truck, container, ship, and air. MineWolf and Mini MineWolf are tracked vehicles which can be operated in

challenging real-world conditions including muddy monsoon season, as well as steep slopes or hot and dusty desert terrain.

- **Cost:** although initially more expensive than manual methods alone due to the hardware investment, reliable mechanical de-mining results in more area cleared in less time and is consequently the more effective method based on cost/output considerations.

According to the Geneva International Center for Humanitarian De-mining (GICHD), "The mine action community is increasingly aware of the benefits of mechanical de-mining equipment in the field. Appropriate application of mechanical de-mining equipment leads to cost-effective clearance and, as a result, to the safe return of cleared land to communities."

- **Safety:** The MineWolf has been biometrically tested for operator survivability by the German Army in 2004. MineWolf machines may also be remotely controlled to provide maximum operator safety. A remote video guidance system also provides a comfortable environment reducing fa-

tigue and human error. Until today no injuries have occurred to personnel driving or operating the machines, nor has a machine been disabled by a mine blast.

Both MineWolf and Mini MineWolf have been successfully deployed in five countries on three continents. Based on over 15 million square meters of cleared land and zero mine-related casualties during de-mining operations, the machines have proven their effectiveness, reliability, and economic viability in harsh environmental conditions.

Innovative Technology

MineWolf machines are designed and manufactured in the South of Germany near Lake Constance, a region famous for its concentration of highly specialized technology companies and engineering schools including the nearby University of Constance and the University of Applied Sciences. From its production site, MineWolf machines are shipped to locations around the world with support through regional MineWolf offices in Afghanistan, Bosnia, and Kenya.



MineWolf machines may be remotely controlled to provide maximum operator safety.

Support by the German Foreign Ministry

From 1992 to 2007, the German Government has provided some €155 million for humanitarian mine clearance activities in 36 countries and is thus one of the world's largest donors. Several Mine Wolf deployments in the Balkans and Sudan have been indirectly funded by the German Foreign Ministry through the humanitarian de-mining organization Norwegian People's Aid (NPA).

Rigorous Testing

MineWolf Systems works closely with the German Army to test and improve its products through rigorous testing against live and simulated mines. Working according to

internationally recognized mine-action standards, the results of each test have been published, and subsequent design improvements have resulted. The most recent German Army testing of MineWolf de-mining technology took place during September 2007 with technical support from the Canadian Center for Mine Action Technologies (CCMAT). It was a four-week trial to determine the effectiveness of the Mini MineWolf using both tiller and flail attachments against simulated anti-personnel (AP) mines, as well as survivability against live anti tank (AT) mines. Results of the trial were excellent, with the Mini Mine Wolf achieving impressive results close to 100 percent with both flail and tiller attachments against small AP mines, as well as survivability against heavy AT mines of up to 13.5kg TNT.

The trial verified the Mini MineWolf's effectiveness against AP mines, as well as its ability to survive occasional AT mine blasts. According to Colonel Radmeier, Chief Development Division of the German Army Engineering School, "The ability to provide safe clearance capabilities in areas contaminated with explosive remnants of war is becoming increasingly significant to the future tasks of the German Army's Corp of Engineers. Mini MineWolf is, based on real-world tests and convincing results, a very interesting option to fill this gap."

About MineWolf Systems

MineWolf Systems is a German/Swiss-based provider of advanced land mine clearance technologies and services. Its flagship MineWolf product has set new standards in terms of reliability and efficiency. During 2004-2007 over 15 million square meters of mine contaminated land in Africa, Europe, and the Middle-East have been cleared using MineWolf technology.

MineWolf (rear) and Mini MineWolf: the right tool for the right job.

