

A close-up photograph of a water abrasive suspension cutting tool, part of the MACE series, being used to cut through a large, rusted metal pipe. The tool is mounted on a metal frame and is actively cutting, with a spray of water and abrasive particles visible at the cutting point. The background shows a grassy area and a body of water.

/// EOD & IEDD WATER ABRASIVE SUSPENSION CUTTING

MACE series

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ANT

Your Challenge

Disarming of Unexploded Ordnance (UXO) and Improvised Explosive Device Disposal (IEDD) is a particularly demanding task.

EOD

Environmental exposure over the time has chemical and/or physical effects on ammunition and often leads to a critical in-situ situation of UXO. Conventional Render Safe Procedure (RSP) is very often not feasible without contacting or shifting UXO. Blasting of UXO is so far used as a final RSP causing partly heavy collateral damages.

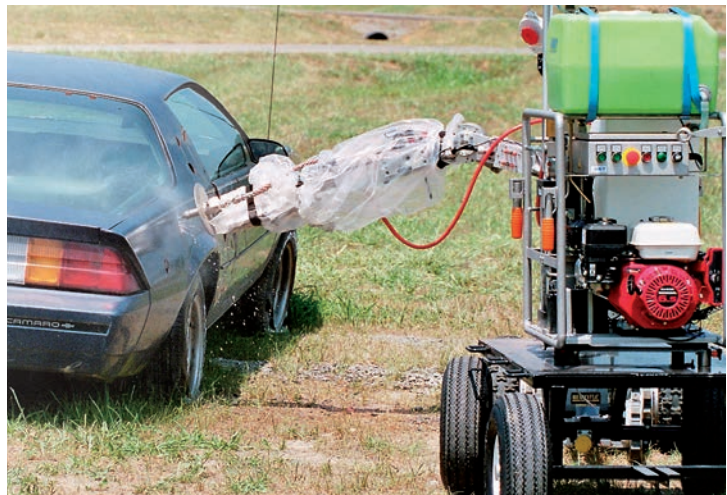
Under water detonations additionally create severe environmental damages by harming or killing marine life.



IEDD

Pipe bombs, hand grenades or potentially hazardous objects such as unconventional explosives in the form of fire extinguishers, gas bottles and suitcases as well as even vehicles are quite commonly used in terroristic attacks.

The use of a disruptor as RSP very often causes severe collateral damage especially in urban areas.



ANT – a cut ahead

For the disarming and deactivation of ammunition as well as improvised explosive devices ANT has developed Mobile Abrasive Cutting Equipment (MACE) that allows to remove or demilitarize fuses remotely, risk-free and safe. It is unrivalled when exclusion of detonations is a must.

Special Advantages with

- ✓ Fuses which cannot be manually removed or deactivated
- ✓ Risk of detonation using disruption techniques
- ✓ Ammunition with chemically dangerous mutated explosive content
- ✓ Opening of containments or objects, without using explosives as opening method

Our Solution – the MACE Series

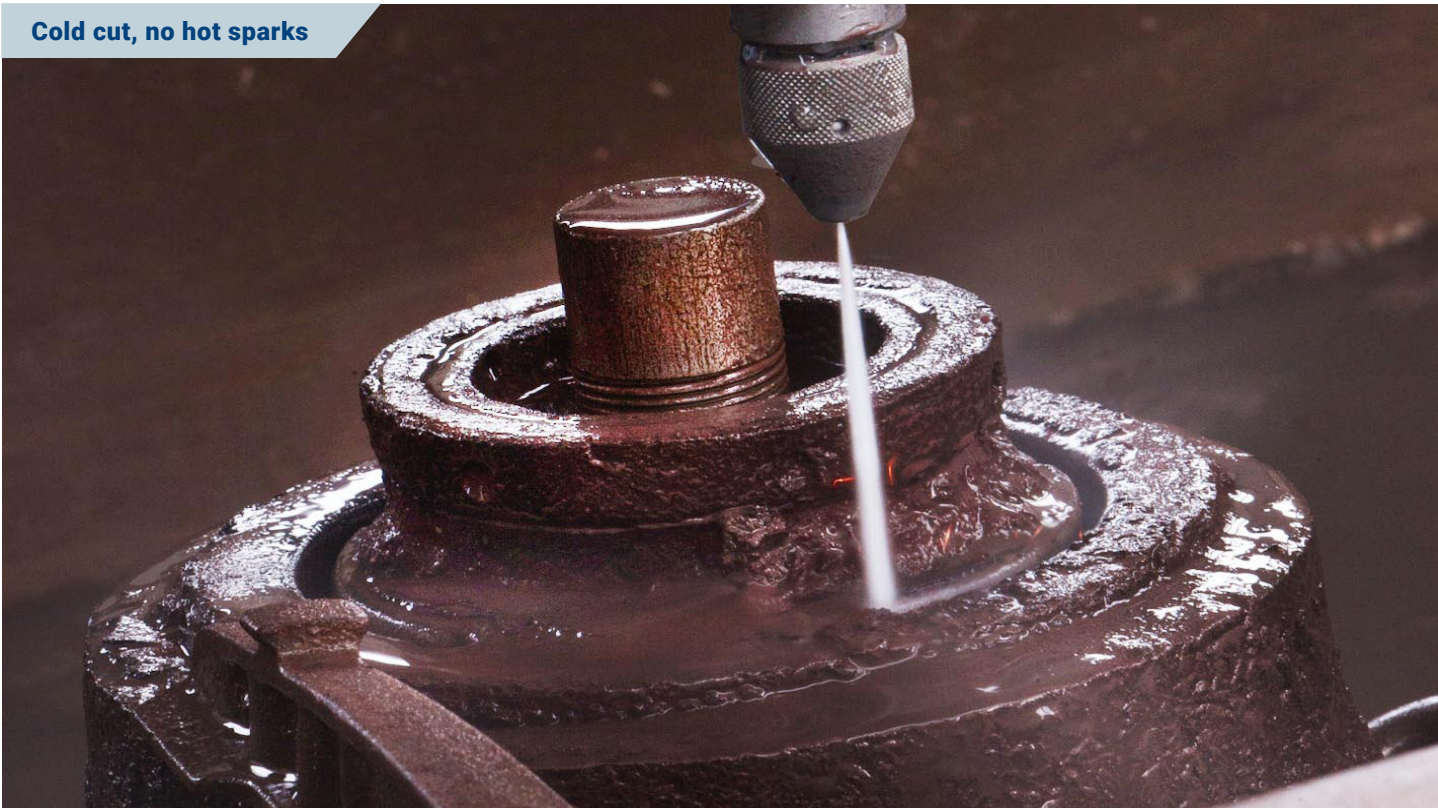
The Mobile Abrasive Cutting Equipment (MACE) is based on ANT's Water Abrasive Suspension (WAS) cutting process.

Water Abrasive Suspension (WAS) Cutting Technology

WAS cutting involves using a high-pressure water jet and a sharp-edged abrasive agent – preferably garnet sand. Besides other benefits, cuts conducted by Water Abrasive Suspension (WAS) technology are

characterised by no physical contact to the target object, no significant temperature increases, very little kinetic energy and the proof of working safe with explosives.

Cold cut, no hot sparks



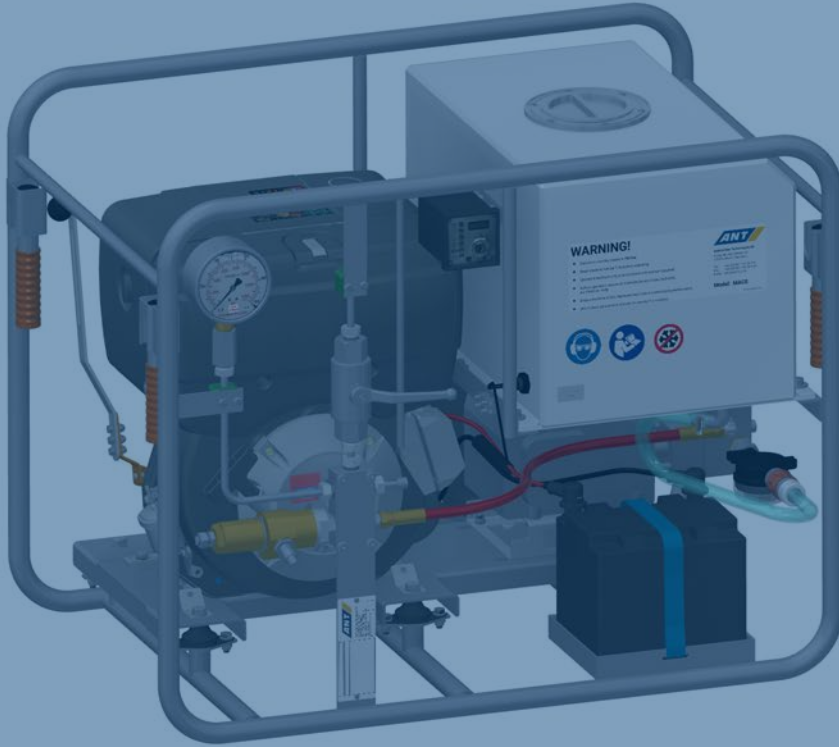
The MACE Solution and its Components

The MACE systems are deployed successfully around the globe and have become state of the art for the RSP: For safe, remote controlled disposal of all kinds of explosives, ANT provides customised solutions consisting of sophisticated components.

Special Features

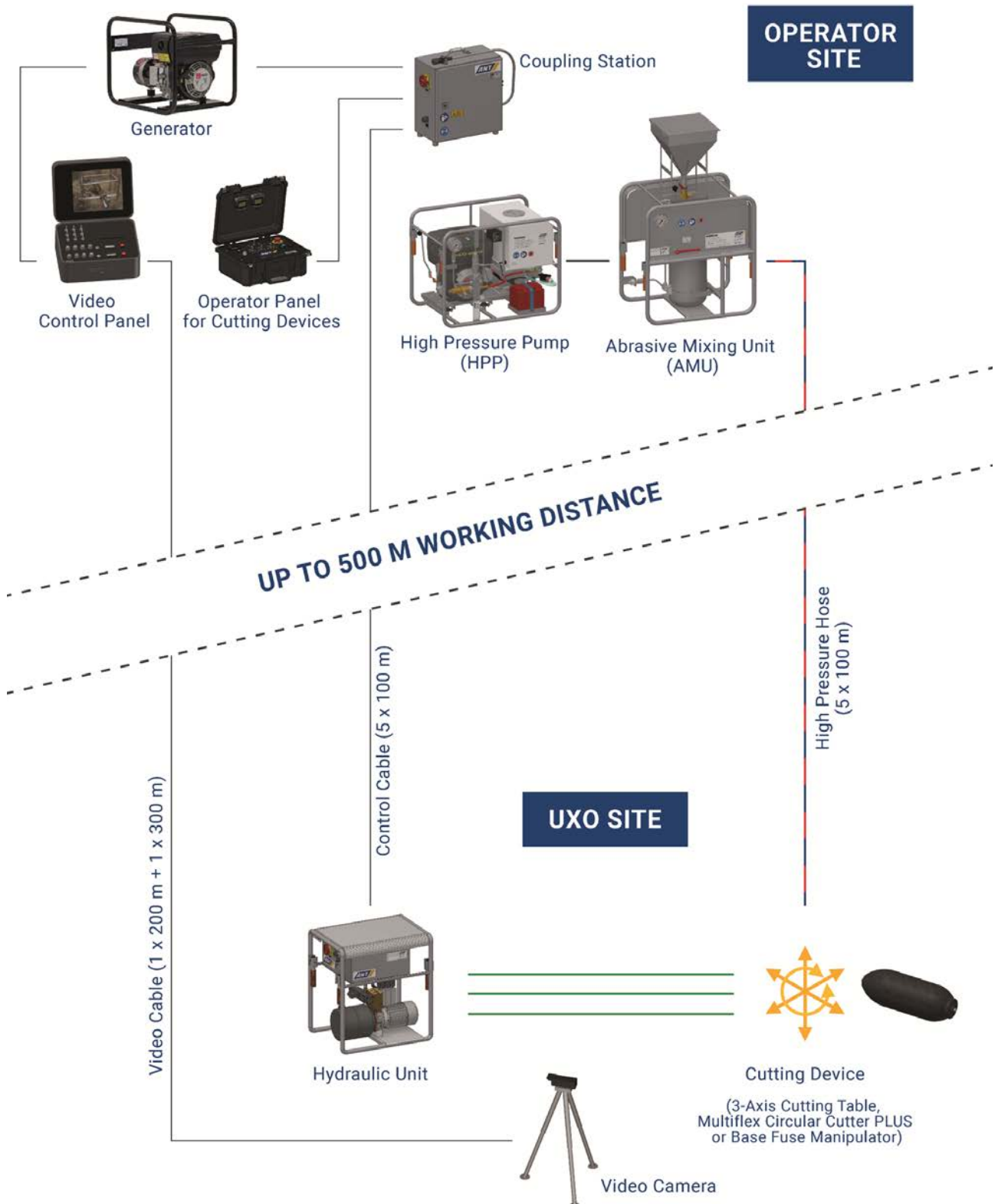
- ✓ Safe / Operators defuse the object from a safe distance
- ✓ Remote controlled cutting devices
- ✓ Portable and easy to operate
- ✓ Cold cut and under water cutting
- ✓ Multi-flexible
- ✓ Patented technology – successfully proven by EOD teams worldwide

MACE



- ✓ Suitable for EOD
- ✓ 700 bar
- ✓ Portable
- ✓ Up to 500 m distance from UXO
- ✓ Cutting time approx. 20 min with one filling of abrasive
- ✓ Available also as XL version (cutting time approx. 45 min with one filling of abrasive)

System Configuration



MACE Cutting Examples

Cutting out a bottom plate



Cutting with Multiflex Circular Cutter



Bomb body without bottom plate

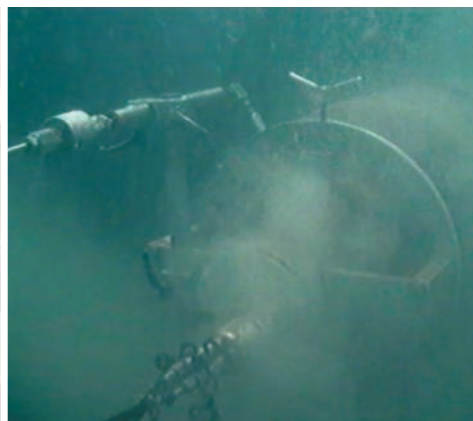


Bottom plate without fuse

Cutting off the back of a bomb



Cutting with Base Fuse Manipulator



Cutting under water



Back of the bomb after salvage

Opening a bomb



Cutting an access hole (in explosives)



Cutting a burn out hole with 3-axis cutting table



Cutting through a detonator



Cutting out a fuse with MACE and Base Fuse Manipulator
(image source: Kampfmittelräumdienst Schleswig-Holstein)

No 17 fuse from a GP 500 LB MK V



Finding situation GP 500



Installation of cutting device



Video control of cutting process



Clamping the fuse



Drawing the fuse with third axis



No 17 fuse with booster charge

MACE & Components

MACE

The Abrasive Mixing Unit (AMU) and the High Pressure Pump (HPP) are the core components of the MACE system.



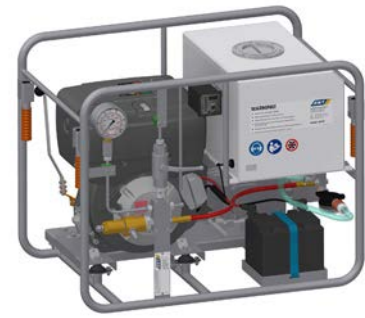
**Abrasive Mixing Unit
AMU 700-12**

- for MACE
- approx. 20 min cutting time per filling of abrasive



**Abrasive Mixing Unit
AMU 700-20**

- for MACE XL version
- approx. 45 min cutting time per filling of abrasive



**High Pressure Pump
HPP 700-6**

- 700 bar
- Diesel / electric starter
- Compatible with both versions of AMU

Generator and Hydraulic Unit with Operator Panel

The hydraulic power unit with intuitive operator panel ensures effective control of the cutting devices.



Generator

- Diesel driven



Hydraulic Unit

- Delivers the hydraulic pressure for cutting devices
- 15 m hydraulic hose



Operator Panel for Cutting Devices

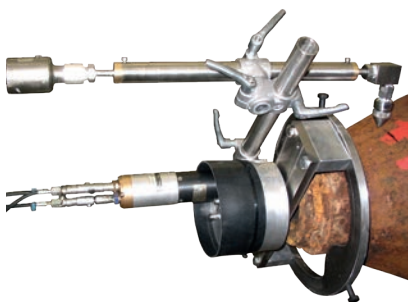
- Control of cutting speed
- Control of axis of cutting devices



Multiflex Circular Cutter PLUS: Centering with laser pointer

Cutting Devices for MACE (optional)

All cutting devices for MACE are hydraulically driven.



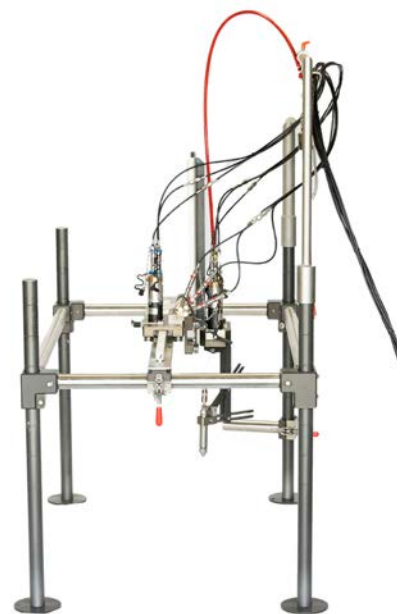
Base Fuse Manipulator

- Defusing of SAP, MC, GP and AP bombs
- Fixation at the bottom of a bomb and cutting off the fuse
- Alternative: Cutting off the back of a bomb including the fuse
- Quick and easy centering



Multiflex Circular Cutter PLUS

- Performing circular cuts
- Clamping and drawing of the fuse
- Click-system for easy set-up



3-Axis Cutting Table

- Cutting of 3D contours
- Modular construction for quick set-up

Accessories for MACE (optional)



Drum Reel Device

- Simple and quick winding of 100 m cable and hose
- Only suitable for the ANT cable drum

Camera System with Video Panel

- For optimised monitoring and control of the cutting process
- With control cable up to 500 m



Bomb Support Ring

- For 500 lb or 1,000 lb
- Fixing a bomb when being defused
- Lifting a bomb after defusing.



Hinged Foot

- Flexible optimised positioning on a small footprint
- Compatible with Multiflex Circular Cutter PLUS

Multiflex Circular Cutter PLUS with Surfex Spindle Cutter



Surfex Spindle Cutter

- Allows to cut the spindle before cutting off a fuse
- Compatible with Base Fuse Manipulator and Multiflex Circular Cutter PLUS

MACE System Solutions

Customised EOD Trailer (Sample, no hardware included)



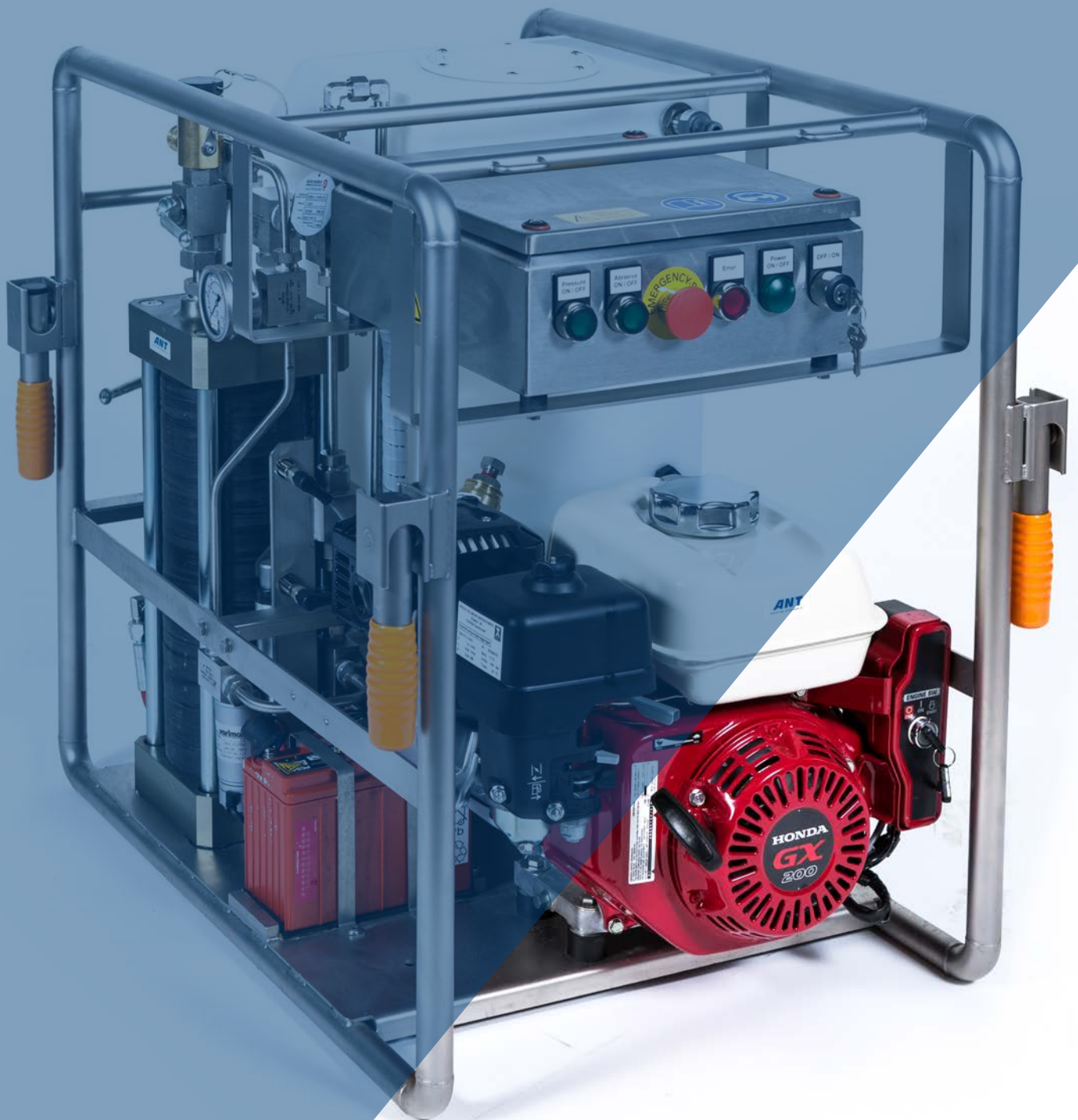
Trailer with MACE & accessories (sample)

MACE can be mounted on selected heavy duty ROVs



MACE & DAKSH UXOR
(sample, no ROV incl./
image source: DRDO)

miniMACE



miniMACE is an autarkic complete system equipped with internal combustion engine, Abrasive Mixing Unit (AMU) and High Pressure Pump (HPP) for accessing and deactivating Improvised Explosive Devices (IED).

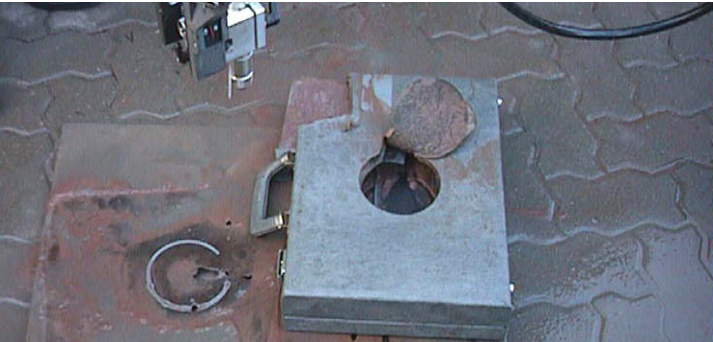
- ✓ Suitable for IEDD
- ✓ 450 bar
- ✓ Applicable with optional cutting devices or with ROV
- ✓ No destruction but preservation of forensic evidence
- ✓ Up to 200 m distance from IED

System Configuration

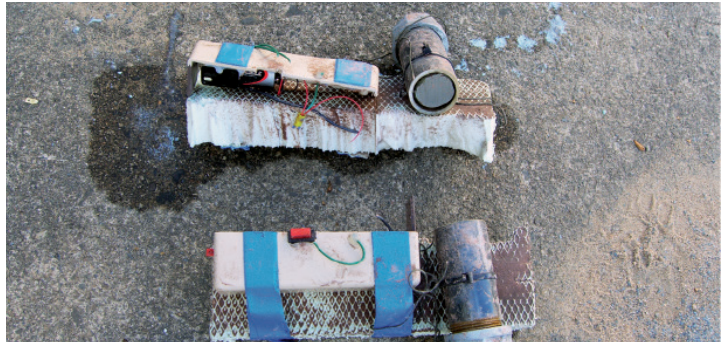


miniMACE Cutting Examples

Cutting IEDs with miniMACE



Inspection hole in a suitcase



A pipe bomb cut with electronic ignition



Cutting a detonator with a 2-axis cutting table



A cut of a hand grenade

Cutting a letterbox with a ROV mounted cutting device





miniMACE with trailer and ANDROS robot

Cutting Large Vehicle Bombs (LVB) with miniMACE on ROV

miniMACE is a piece of access equipment that can be used for LVBs or any containment which may have been used to conceal IEDs, regardless of the body material (steel, aluminium, plastics, wood, fibreglass, glass, etc.).

The miniMACE system can be operated with selected EOD robots.

The miniMACE LVB Features

- Safe and reliable access to the inside
- No destruction but preservation of forensic evidence
- Optimal risk assessment
- Ability to carry out the Render Safe Procedures (RSP) inside



Cutting a hole into the car



miniMACE in use with EOD robot



Cutting the windshield



Cutting security glass

miniMACE & Components



miniMACE

miniMACE combines an abrasive mixing unit, a high pressure pump and a combustion engine in a single frame.



Operator Panel for Cutting Devices

- Control of cutting speed
- Control of axis of cutting devices

Cutting Devices for miniMACE (optional)

All cutting devices for miniMACE are electrically driven.



2-Axis Cutting Table

- Designed for 2 D-contours
- Lightweight – easy to handle – mobile
- Vertical and horizontal use



Circular Cutter

- Easy and quick circular cuts
- Lightweight and small
- Also available with suction cups

Accessories for miniMACE (optional)



Drum Reel Device

- Simple and quick winding of 100 m cable and hose
- Only suitable for the ANT cable drum



Camera System with Video Panel

- For optimised monitoring and control of the cutting process
- With control cable up to 500 m

miniMACE & Remotely Operated Vehicles

miniMACE can be connected to selected EOD robots



miniMACE with
trailer and ANDROS

tEODor ROV
connection



- ✓ Suitable for IEDD
- ✓ Battery-powered
- ✓ 120 bar

midimACE is an autarkic and lightweight system for easy access within buildings or airplanes. It is suitable for ventilating gas bottles or making access holes in thin-walled Improvised Explosive Devices (IED).

Cutting Devices for midimACE

All cutting devices for midimACE are battery driven.



2-Axis Cutting Table

- Designed for 2 D-contours
- Lightweight – easy to handle – mobile
- Vertical and horizontal use



Vacuum Circular Cutter

- Easy and quick circular cuts
- Manually locked vacuum sucker for clean, even and plain surface
- Pneumatic locking mechanism for uneven surfaces also available

Be Sure of an Individual Solution



Laura-Christin Krebs, Sales/Product Manager ≤ 700 bar

“ANT has succeeded in creating a safe way of defusing explosives in a highly sensitive and dangerous working environment. Customer requirements always have the highest priority, so customised designs are not uncommon. In addition, we carry out individually tailored user trainings. The Water Abrasive Suspension (WAS) cutting method has thus established itself worldwide as a technological advance for explosive ordnance disposal services.”

The ANT Quality and Service Worldwide

Our „Engineering made in Germany“ is a global success and stands for high quality, reliability and an ability to solve problems.

The training and experience as well as the personal commitment of each individual in the team of ANT and our worldwide network of sales agents guarantees the high quality and functionality of our systems and their successful application at the customer's site.



References (Excerpt)

MACE and miniMACE are successfully in use with EOD teams worldwide:

Germany

- Explosive Ordnance Disposal Service of
 - Baden-Wuerttemberg
 - Brandenburg
 - Hesse
 - Lower Saxony
 - Mecklenburg-West Pomerania
 - North Rhine-Westphalia
 - Saxony
 - Schleswig-Holstein
- German Armed Forces

Australia

- Department of Defence

Bangladesh

- Air Force
- Army

Belgium

- DOVO SEDEE

Bulgaria

- Ministry of Defence

China

- Xinjiang PSB
- Department of Defence
- Police Beijing
- Police Tianjin

France

- DGA (Ministère de la Défense)
- Securité Civil

Hongkong

- Hongkong Police Department

Hungary

- Ministry of Defence

India

- Air Force

Japan

- Defence Agency

Latvia

- Riga Police

Lithuania

- Ministry of Defence

Netherlands

- Ministerie van Defensie, Koninklijke Landmacht

Slowakia

- Ministry of Defence

Sweden

- SWEDEC

UK

- Ministry of Defence
- DSTL, Porton Down

USA

- Las Vegas Fire & Rescue
- Honolulu Police Department
- Denver Police Department
- HDS (Hazardous Devices School)

A CUT AHEAD

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Website



Product
Configurator



References



YouTube



XING



LinkedIn

