HOTZONE SOLUTIONS®

www.hotzonesolutions.org

HOTZONE SOLUTIONS®

Product Catalogue

HAZARDOUS SUBSTANCES
MANAGEMENT SOLUTIONS

The `Hot Zone´, also referred to as the `Exclusion Zone´ or `Restricted Zone´; is the area that is contaminated during an incident. Because it is the highest hazard area it is surrounded by two other areas; the `Warm Zone´, which provides a buffer to the general community and provides a staging and command area for operations; and then the `Cold Zone´, which is regarded as safe.

info@hotzonesolutions.org

Content

CBRN Decontamination

HZS CBRNE Scene Management

HZS CBRNE Instructional Equipments

HZS CBRNE Platform Integrations

Environmental Solutions

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Our Mission

To enable first responders to prevent, prepare for, respond to, and recover from the full spectrum of CBRNE threats and to provide CBRNE environmental protection and remediation solutions.

Our Primary Focus

To provide realistic, practical solutions wherever possible.
All of our solutions are tailored and adapted to meet your needs and requirements; with your input we will develop what is needed.

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HOTZONE SOLUTIONS

The world's most practice-oriented provider of Hazardous Substances Management Solutions.

Hotzone Solutions Group is an independent company with a first-class reputation for providing a wide range of training, equipment, security and consulting services to the chemical, biological, radiological/nuclear and explosives (CBRNE) response and environmental protection community.

The corporate headquarters is based in the Netherlands and Hotzone Solutions Group maintains regional offices in Belgium, Brazil , Serbia, USA and the United Arab Emirates. The company was established in 2009 with unique field experience in CBRNE defense, international weapons inspection, emergency response, environmental protection and counter-terrorism, Hotzone Solutions Group offers a full-spectrum service.

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OUR PRODUCTS

Our staff have been tasked to design, develop, test and implement products that not only suit the requirements of the user, but enhance their capabilities.

This means the customer can be more prepared and protected against the vast range of hazards that the CBRNE materials present. Every product we develop is targeted to address a specific issue that our own staff have identified while working under operational conditions. These products may be innovative, integrated or stand alone, but capable of doing what they are designed for, in the environment they are expected to be used in. We can take you one step further with your response and protection capabilities.

We provide dedicated training for each product

HOTZONE SOLUTIONS

HZS CBRNE Sampling

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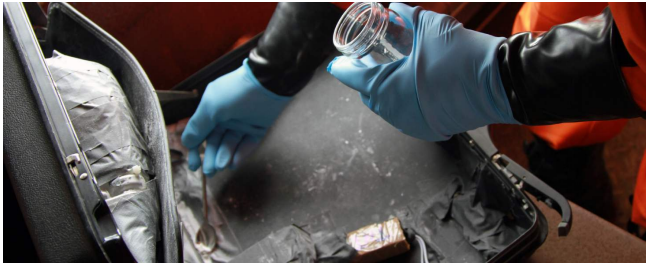
CBRN Sampling Kit

The CBRN Sampling Kit is built upon the experience from the critical international missions and events, such as the Syrian civil war.

The kit enables safe collection of all kinds of liquid, solid, wipe, gas/vapor and aerosol samples, coming from environmental or bulk sources.
The user can choose between the prepacked, integrity guaranteed modules sorted according to the sample types.

The modules are field carried by the featured one-strap backpack for easy and hands-free use



Solid Scoop Module

Wipes Module

Cut-out Module

The CBRN Sampling Kit is designed for hazmat responders, military, police or forensic personnel to collect samples potentially containing chemical, biological, and radiological threat agents, including chemical warfare agents, toxic industrial materials and toxins. The sampling tools are carefully selected based on actual field experience with the majority being amenable to decontamination and can be re-used, if deemed necessary. The tools come in the traceable, sealed modules,
with certificate of cleanliness for evidence collection cases. A selection of sample containers is available, chemically
resistant, and are leak proof, and adequate for long term storage of
different sample types and volumes.

Liquid Module

Biological Module

- Field Validated with live agents
- Modular design
- Compact
- Versatile

Solid Chips and Pieces Module

Air/Vapour/Aerosol Sampling Kit

Sampling of Airborne and Surface Deposited Chemical Biological and Radiological Hazards

A portable, lightweight, yet powerful rotary vane pump for active sampling at both, low and high flow ends. The sampling assembly is calibrated using a field ruggedised, battery operated primary calibrator.

A vacuum-style cassette design provides also for direct collection of the solid particles and pathogens from solid surfaces, such is carpet. Samples are easy to manipulate and over pack for a transport/ evidence.

- Portable
- Field Ruggedised
- Versatile

At low flow end, chemical vapours are collected into solid adsorbent tube. A selection of sampling tubes is offered depending on the sampling targets and end users' analysis techniques.

Vapours and solid/liquid aerosols can be collected using portable impingers filled with solvent of choice. This is an optional item separately requested.

Solid aerosols/particles potentially containing chemical, biological or radiological threats are collected using cassettes with membrane filters.
A range of membranes of different pore sizes are available.

Field Spectroscopy Kit

The complete solution for the portable Raman and FTIR use under field conditions

The Field Spectroscopy Kit is built upon the experience from the critical international missions in Syria, Iraq and Lybia. It comes as the field ready solution that enables :

- Hands free carrying of portable Raman and FTIR instrumentation under hazardous and non-hazardous conditions.
- Collection and manipulation of liquid and solid samples coming from loose or packaged sources.
- Optimised introduction of the samples to the on-site Raman and FTIR analysis.
- On-site and off-site transport of the samples.

A chemically resistant, leak proof secondary container is provided for on-site and off-site transport of primary containers with samples. The container is suitable for the most of the hazardous substances, including : Flammable Liquids (Class 3) ; Flammable Solids (Class 4) ; Oxidizing Agents (Class 5) ; Peroxides (Class 5) ; Toxics (Class 6.1) ; Infectious Substances (Class 6.2) ; Some Radioactives (Class 7) ; Most Corrosives (Class 8).

Sampling tools and analytical instrument (FTIR , Raman) are field carried by the featured one-strap backpack made of waterproof and wear resistant material.
One strap backpack carrier design provides:

- Hands-free operating in potentially hazardous areas.
- Accessibility - the single strap design allows the bag to quickly swing to the front of the body for access, even when wearing PPE.
- An easy, one-click mechanism for release of the backpack. The single operator can use the kit without the need to place it on a potentially contaminated surface. It weighs less than a two-strap backpack, while retaining the full capacity.

Sample collection and handling tools are carefully selected,majority made of non-sparking and non-magnetic materials and disposable. The tools allow collection of solid and liquid samples and come in the sealed packages with the optional cleanliness
statement for evidence collection cases.

- Field Validated with live agents
- Modular design
- Compact
- Versatile

Inspection Camera Sampling Kit

Endoscopic, flexible sampling tool with HD camera provides insight into hard to reach areas for reconnaissance, forensic evidence recording, and sample collection

A flexible and rigid snake wire camera cable comes with a choice of sampling attachments. With overall length of 5 m and small diameter, this camera tool can be pushed through narrow openings, channels and sinks or used for inspection of suspicious objects and large volume containers (e.g. chemical barrels, reactors).

Liquid Sample Collection Assembly

A syringe with a luer type stopcock is connected via a luer lock adapter to a chemical resistant tubing. The tubing is provided in a whole length of camera.
The tubing can be attached to the camera by mean of the special adhesive tape. After use, the tape is easily removed without a trace and the system is detached from the camera.

Ultimate Connectivity

Android smartphone/tablet, Windows PC/ tablet, MacBook OS. Optionally offered: a though book and a waterproof and shock proof smart phone with 13-megapixel camera and FLIR thermal imaging sensor.

Wipe attachment for a surface sampling or collection of liquid samples.

Mirror attachment extends field of vision.

Magnetic pick-up tool attachment for extraction of metal fragments.

MONICA & MIDAS

For C, B or R IEDs and
C or B Munitions

MONICA: Remote case entry system CBW sampling & disposal

The Valent Monica equipment is the first system to offer a complete solution for the investigation and disposal of CBW
in conventional or improvised devices.

MIDAS: Manual sampling system

Valent's Midas system gives users the ability to rapidly take a sample of the internal contents in a safe, reliable and leak free way.

The use of non-invasive techniques such as X-ray or PINS is well known in the
CBEOD/CBRIED environment. Whilst these are effective in the correct circumstances, they are not always the best option. Invasive technology, which safely penetrates the device, offers many advantages and should be standard equipment within any CBRN/EOD/IED team.

With Invasive technology a sample can be collected within minutes without risk of
release, The accurate identification ensures the correct response to the threat.

The Challenge

A chemical/biological munition or an IED with CBR payload ("dirty bomb") presents the EOD/IED team with a significant challenge. Most devices will involve a sealed container designed to release
the agent at the correct time. Sealed containers are not only good at keeping the agent in but also excellent at keeping CBRN/EOD teams out.The environment will often rule out Blowing in Place (BIP)
as an option.

Identification

The first phase in any CBR
N/EOD operation will be to identify the agent involved for correct threat
assessment, which will determine the appropriate response. Although there are
many systems available few will penetrate a metallic container/munition.

Noninvasive techniques that have this capability are reasonably accurate but
can be easily fooled and often have a significant logistics burden, In reality only an actual physical sample can offer 100% accuracy.

Invasive techniques can obtain this safely and simply. A sample can be collected within minutes without a risk of release. Accurate identification ensures the correct response to the threat.

- Fast
- Simple
- Portable
- Safe

This specialised equipment is used by many of the world's leading CBRN/EOD/IED units and organisations.

Disposal

This area probably presents the greatest challenge to CBRN/EOD/IED teams as conventional BIP and disruption
techniques run a high risk of releasing the agent. Where non-invasive techniques have been used to identify the contents the team still has a sealed container to deal with. Invasive equipment penetrates the container's skin whilst retaining its integrity.

The device can then be drained and decontaminated in-situ. Equally the penetration can be utilised for other investigative techniques such
as
endoscopes if appropriate.
This can all be done through the same penetration used to take a sample.

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HZS CBRNE Sample Transport Solution

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CBRNE Transport Packaging

SAAB – Provides Safe transportations

CBRNe Transport Packaging is a unique container designed for safe transportations of CBRNe samples and other hazardous materials.

It is certified for all types of transportations, including by road, railway, boat and airplane, according to the transport regulations of ADR, RID, IMDG-code and ICAO-TI/IATA. Even in full protection clothing it is easy to handle. The package consists a case and a transportation container.

Features

The transport packaging solution provides safe transportation of hazardous CBRN samples and toxic industrial chemicals. Easy to handle even in full protection clothing and approved for air, land, sea and rail transports.

The package consists of a case and a transportation container. The plywood case has aluminium reinforced edges, is furnished with shock absorbing material and has a documentation compartment for signs, seals, transportation documents, test documents, manual and spare parts list. The transportation container is made of stainless steel with two shock-absorbing inserts housing 1 litre or 250ml assaying vessel.

Sample Transport Kit – C

The HZS Sample Transport Kit - C is suitable as a secondary container for on-site and off-site transport of hazardous substances classified by prominent regulatory frameworks (the United Nations Recommendations on the Transport of Dangerous Goods, ICAO's Technical Instructions, IATA's Dangerous Goods Regulations and the IMO's International Maritime Dangerous Goods Code) as follows:

- Toxics (Class 6.1)
- Flammable Solids (Class 4)
- Oxidizing Agents (Class 5)
- Peroxides (Class 5)
- Flammable Liquids (Class 3)
- Most Corrosives (Class 8)

The sample transport container has capacity of 1.5 liters and is capable of withstanding pressures of up to 95 kPa (1 Bar).
The closure is internally threaded polypropylene which is secured tightly using the top handle. The seal is achieved by EPDM (terpolymer of ethylene, propylene, and a diene) rubber ring.

The container includes two types of specimen holders made of expanded polyethylene. A special activated carbon foam pad is provided to line the bottom or top of the container in order to contain contamination or off-gassing resulting from an accidental primary container leak.

A tactical utility pouch with single point sling is provided for safer and hands-free transportation of the container on site.
A fiberboard outer packaging can be used for transport of the container off-site.

Sample Transport Kit – B

The HZS Sample Transport Kit - B is suitable for on-site and off-site transport of all infectious substances classified under as Class 6.2.

Similar to HZS Sample Transport Kit – C, the container can hold 1.5 liters and withstanding pressures of up to 95 kPa. The closure is internally threaded polypropylene which is secured tightly using the top handle. The seal is achieved by EPDM rubber ring.

The container kit also includes specimen holder, bubble pouch, absorbent pad, fiberboard box and shield, and Class 6.2 hazard label. Additionally, a tactical utility pouch is provided for hands-free transportation of the container on site.

Two types of outer packaging are available for transport of the B-container off-site:

- The standard option, dry ice must not be packed in the sample transport container.
- The optional configuration consists of a Polystyrene freezer container with closure and closure stabilizer. Dry ice can be packed inside of the freezer. This option conforms to I.C.A.O./ I.A.T.A. packing instruction 954 for dry ice shipments.

Sample Transport Kit – R

The HZS Sample Transport Kit - R is suitable for shipping Class 7 (Type A) radioactive materials. It conforms to the requirements of the ICAO 2015-16 edition technical instructions for transporting dangerous goods by air and the ADR, 2015 edition, for the carriage of dangerous goods by road.

Class 7 Radioactive Material is defined as any substance with a specific activity greater than 70 kBq/kg (70 Bq/g). Examples of material typically shipped in Type A Packages include nuclear medicines (radio-pharmaceuticals), radioactive waste, and radioactive sources used in industrial applications.

The polypropylene secondary container has following dimensions: 62 mm x 175 mm. The outer box has following dimensions: 100 mm x 100 mm x 220 mm. The polypropylene container is reusable and fully autoclave at normal temperatures. It can withstand up to 500 k Pa pressure.

Primary Storage Containers

Collected samples are stored into primary containers: glass jars, bottles or vials.
The primary containers with range of volumes and neck designs are available.

The wide neck jars are preferable primary storage containers for solid samples and wipes. The narrow neck bottles are preferred when storing higher volume of liquid and water samples.

Amber glass containers are recommended for a long-term storage/transport. The vials are intended for neat chemicals, other low volume samples and swab tips obtained by breaking of the swab's wooden handle.
All containers have a Teflon lined lid: inert gas tight and leak proof.

HOTZONE SOLUTIONS

CBRN EOD/IED

Explosives Detection Kit

On-the-Spot Information-Unique, New & Reliable Solution

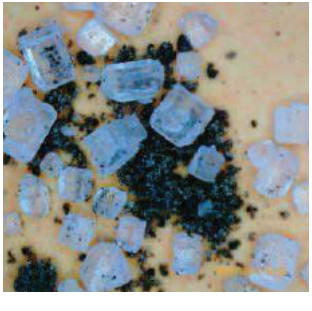
The Hotzone Identifier Explosives kit enables rapid assessment and identification of explosives and their precursors. Easy to use, rugged and reliable tools provide the user with information on homogeneity, sensitivity to impact and flammability of the test materials.

The number of specific and general analytical assays identifies commercial, military and homemade explosives (HME) and components. The kit is self-contained and features the step-by-step field guide in color.

The Hotzone Identifier Explosives kit features a set of tools and procedures to provide its user with the critical information on the unknown substances flammability, explosive behavior, acid- base properties, aggressive/corrosive behavior, reactivity with water, relative solubility and density.

Wet and strip tests detect explosive fuel precursors such as hydrocarbons, carbohydrates, heavy metals, sulphur and phosphorus. Oxidiser tests identify species known to be used with the explosive mixtures.

Specific analytical assays target ammonium nitrate based explosives (ANAL, ANFO, ANS), PETN, RDX, TNT, Semtex, C3, C4, HMX, urea nitrate, chlorates, and azides.



- Easy to use
  Field ruggedised
- Comprehensive Material Evaluation and identification
- Provides the critical Safety information

HZS Field X-ray

Remote and non-destructive evaluation

HZS X-Ray Radiography sets allow remote and safe examination of the internal structure, content and nature of potential threat objects. The equipment can reveal in a great detail the presence of elements characteristic for improvised explosive charges, as well as interior liquid/suspension content, which may suggest the presence of chemical, biological or radiological agents.

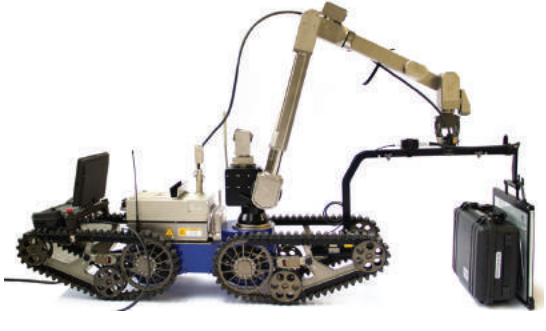
Two sets of the equipment are offered, both compact for a field transport and use. The sets differ in power ratings of the X-ray generators, enabling the user to select the solution best suited for the anticipated use. Rugged control units are provided with Xplus Security software - "one-does-it-all" inspection suite for law enforcement squads operating in the field of Explosive Ordnance Disposal (EOD), Improvised Explosive Device Disposal (IEDD), forensics or similar.

Control Unit with XPlus Software platform :

- Rugged tablet PC units, screen size 10-/12-/14-inch user selectable, daylight certified touch display with operating system Windows 10 IOT.
- "One Button" operation for intuitive handling through pre-defined sequences.
- High resolution and image enhancement filters for advanced visual inspection.
- Material-classification through Dual-Energy filter, differentiation between organic and inorganic material.
- Comprehensive measurement and decision-assistance functions.
- Forensic toolbox supports IED Network analyses and inspection of wire-taps, image comparison tool that highlights alterations during revision.
- Extensive archiving options and integrated mission log archive.

Robot Integration Module :

The robot module allows a deep integration of the Xplus Security systems into bomb disposal vehicles like tEODor and telemax. The X-ray control and image display is directly embedded in the robot remote and monitor. Long range Wi-Fi allows inspection of suspicious objects from a safe distance.



XPlus Security 1 combines lightweight flat panel detector 2532X with GE XR-150 X-ray source.

2532X:

- Battery operated TFT panel with photodiode.
- Wide quantization depth with low noise level.
- 2048 × 2560 pixels, 16bit greyscale.
- Outstanding image quality.
- Highly portable (322 mm x 355 mm x 17 mm) and lightweight (2.7 kg).
- Portrait and landscape.
- High speed wireless transmission (802.11n/ac Wifi standard at 2.4 & 5 GHz) with 3 antennas. Wired LAN option.

GE XR-150:

- Pulsed X-ray generator, battery operated, rugged for a harsh field condition.
- Maximum photon energy 150 KVP.
- Compact (231 mm x 77 mm x 104 mm) and lightweight (2.2 kg).

XPlus Security 2 combines lightweight flat panel detector 3643X with powerful GE XRS3 X-ray source.

3643X:

- Battery operated TFT panel with photodiode.
- Wide quantization depth with low noise level.
- 2560 x 3072 pixels, 16bit greyscale.
- Outstanding image quality.
- Portable (400 mm x 470 mm x 17 mm) and lightweight (4.2 kg).
- Portrait and landscape.
- High speed wireless transmission (802.11n/ac Wifi standard at 2.4 & 5 GHz) with 3 antennas. Wired LAN option.

GE XRS3:

- Pulsed X-ray generator, battery operated, rugged for a harsh field condition.
- Maximum photon energy 270 KeV for a high penetration of thick and dense objects.
- Compact (361 mm x 108 mm x 148 mm) and field transportable (5.4 kg).

HZS Raman Solution

HZS Raman Spectroscopy Kit

Access to Hotzone Solutions unique CW Database

Three Scan modes :

- Screen : screening a sample for the presence of a restricted substance
- Verify : search for a match to one specific substance rather than several
- Identify : classify all the unknown substances in a sample, rather than singling out a specific substance or substances.

Highly miniaturised, self-contained Raman spectrometer and embedded analysis software.

Actively Fighting Fluorescence

The common enemy of Raman spectroscopy analysis is fluorescence emitted by some brightly coloured samples. Indicator 100 fights the fluorescence by time-resolved detection - an advanced solution that has been shown effective. Amber glass is also not an obstacle.

Optional Database :

- CWA agents and precursors (developed by Hotzone Solutions)
- TICs
- Explosives
- Pharmaceuticals
- Narcotics & precursors

Functions :

- Handheld rugged - Waterproof (Mil-Spec and IP67).
- Intuitive interface.
- Advanced mixture analysis.
- Multi-language - Chinese, Danish, English, French, German, Indonesian, Japanese, Russian, Swedish.

- Measuring
- Storing
- Analysing
- Sharing Chemical Data

More than 8,000 unique compounds spectra in library. Users can also create their own database.
You can choose one or all target substance categories from a list (e.g. Narcotics and/or Explosives). The Indicator will then analyse the sample and search for a match in the stored spectra. Depending on your license level, this may be up to several thousands of substances.

Non-touch screen for reliable usage in any conditions

- Weight < 1.5 lbs (0.65kg)
- -20°C to +40°C (operat.); -30°C to +50°C (stor.)
- MTBF > 50 000 hours (~6 years)

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HZS CBRNE Analytical Solution

HZS Custom-Made Deployable Analytical Laboratory

Mobile Analytical Platform for Responders.

The Hotzone Responder DAL is a mobile, self-sustainable solution configured and optimised for: :

- Urban and rural deployment.
- Analytical screening of CBRE threat agents.
- Environmental pollution assessment.
- Major industrial accidents response.

The DAL is equipped with the state of the art analytical equipment for fast information gathering and timely response. Hotzone Responder DAL is not an off the shelf product; it is the result of collaboration and careful consideration of the end user's needs. The customisation is complete and includes:

- The mobile platform-vehicle.
- Energy management systems.
- Safety systems (communication, sample egress, fume hood system and ventilation, individual protection, decontamination, cleaning, etc.)
- Analytical equipment and methodologies.

All DAL concepts are realised with the highest standards of fabrication ("Made in Europe") and materials.The analytical equipment is supplied with the worldwide service warranty.

How the selection process works ?

- The end user communicates the needs
- Our team of experts proposes
- The end user selects
- We deliver the complete solution

The complete solution includes the hardware, the software, the methodology for sampling/sample handling and preparation/sample analysis/ initial decontamination.

Depending on the clients needs, the Hotzone Responder DAL is equipped to sample & Identify:

- Chemical threats including chemical warfare agents (CWA), toxic industrial chemicals (TICs) and materials (TIMs), narcotics, household chemistry and inorganic food poisons.
- Biological threats including selected bacteria, viruses, fungi, and range of bio toxins originating from higher animals and plants.
- Radiation threats including radio nuclides in dirty bomb scenarios.
- Explosive threats including commercial and homemade explosive mixtures and precursors.
- Organic pollution such as oil and petrochemical spills, pesticides, etc.
- General and emergency water quality parameters in drinking and weakly contaminated waste water.
- Heavy metal and microbiological water pollution.
- Terrestrial and artificial radiation sources.
- Plankton population in surface waters.

Analytical methodologies are based on our unique approaches proven in the field with the authentic of "live" threat agents.

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HZS CBRNE Detection

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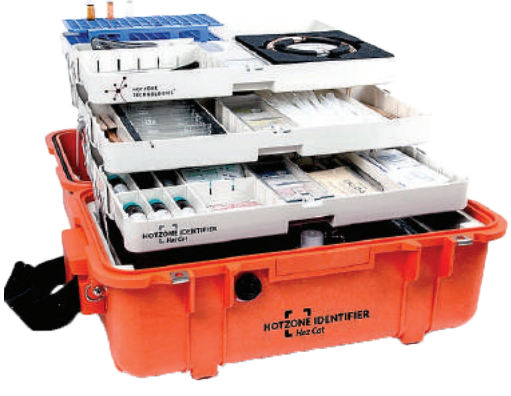
HazCat Kit

On-the-Spot Categorisation of the Unknown

The Hotzone Identifier HazCat kit enables rapid identification of the hazard(s) associated with gas, solid, and liquid unknowns, spills, waste. This information is critical for the hazmat responders to complete the risk assessment.

Categorisation of the potentially hazardous waste provides for its labeling, safe transport and disposal. The kit is self-contained and features the step-by-step field guide detailing the procedures which are quick and easy to perform.



- Easy to use
  Fast and versatile
- Field ruggedised
- Provides the critical hazards information

Hotzone Identifier HazCat kit procedures use strip tests and wet chemistry tests to provide the user with the critical information on the unknown substances flammability, explosive behaviour, acid-base properties, aggressive/corrosive behavior, reactivity with water, oxidiser properties, potential toxicity, relative solubility and density.

The kit also enables quick and simple identification of 5 most frequently encountered toxic industrial gases.
The reagents, test strips and utensils are housed in the water-proof Peli-case in sufficient quantities to last for a relatively large number of tests. The built-in working surface provides for clean and convenient field work.

HZS Multipurpose Dosimeter-Radiometer

MKS-UM is a radiation survey device especially suited for field environment applications.
Measuring alpha, gamma and beta radiation, the range for radiation dose varies from background to emergency levels. The device has a non-volatile memory, and recorded results can be viewed on the display or transferred to the PC. The results can be stored with reference to the measurement location coordinates,

when the instrument is used with the optional dual-system GPS / GLONASS receiver. The device uses lithium-ion memory-effect-free battery. The display indicates the statistical error of measurements. Availability of the analogue indicator of radiation intensity facilitates localization of radiation sources. High protection rating IP67 and a rubber protective case allows use of the device in harsh climatic conditions

Capability :

- Measurement of ambient dose equivalent rate (DER) of gamma and X-ray radiation
- Measurement of ambient dose equivalent (DE) of gamma and X-ray radiation
- Measurement of beta-particles surface flux density and beta-particles surface activity
- Measurement of alpha-particles surface flux density and alpha-particles surface activity
- Measurement of accumulation time of gamma and X-ray radiation DE
- Archive of measurement results tagged to location coordinates

Features :

- Automatic selection between measurement intervals and ranges.
- Backlit indicator and control keys for operation in the dark.
- Rechargeable lithium-ion battery charging by the built-in charger from: Internal solar battery, 12 V automobile battery and 220 V/50 Hz mains power using a voltage converter.
- Operates under conditions involving atmospheric precipitation, dusty atmosphere (IP67).
- Viewing of logged measurement results on the display.
- Easy to operate even if wearing personal protection – rubber gloves.
- Wide operating temperature range from -30 - +55°C.
- Display temperature resistance – +95°C.

- Measuring
- Storing
- Analysing
- Sharing Chemical Data

HZS Search Alarm Dosimeter

Dosimeter-Radiometer SPECTRA MKS-11GN

SPECTRA is a compact, highly sensitive device to detect, localize and identify radioactive and nuclear materials. A recommended instrument for preventing illicit transport of radioactive materials cross the state borders and general nuclear safety in facilities dealing with gamma and neutron radiation sources.

Using a brand-new search algorithm, SPECTRA is able to achieve high level of sensitivity, detecting the slightest change of gamma or neutron background level. New generation scintillation detectors with the silicon photomultiplier ensure high thermal stability of the device and eliminate the "microphone effect". The device provides an outstanding user experience due to its innovative design, compact size, large colour displays and a 45 hours' continuous operation time.

Capability :

- Identification of the radionuclides type by their amplitude gamma spectra.
- Determination of gamma and neutron radiation intensity.
- Measurement of ambient dose equivalent rate of gamma and X-ray radiation.
- Indication of ambient dose equivalent rate of neutron radiation (neutron ionizing radiation DER).
- Measurement of gamma and X-ray radiation ambient dose equivalent (DE).
- Amplitude gamma spectra and events logs stored in a non-volatile memory.

- Detect
- Localize
- Identify

Features :

- New generation high sensitivity CsI scintillation detectors of gamma and LiI of neutron radiation with solid state (silicon) photomultiplier.
- Color display with high resolution and colour coded alarm.
- Storage and transfer of 250 complete gamma radiation spectra.
- Powerful CPU and improved algorithms for spectra processing.
- New software for detailed laboratory research and spectra processing.
- Integrated GPS/GLONASS-receiver.
- No "microphone effect".
- High thermal stability.
- Powered by built-in lithium polymer storage batteries that can be charged via USB-cable.
- The dosimeter communicates with a PC via USB-port.
- Real-time identification of spectra.

HZS RadTriage - 50

Personal Radiation Dosimeter

Three Scan modes :

RADTriage-50 is an instant-read personal detector and acute dose dosimeter. It is intended to be used for monitoring medically significant radiation exposure in the event of a radiological incident.
RADTriage-50 supplements but does not replace other radiation detection devices that a user may be required to use. RADTriage-50 has two monitors: the sensor and FIT indicator.

- The sensor will not monitor gamma/X-ray below 30 KeV, electrons/beta below 0.5 MeV and Alpha particles.
- The sensor will not monitor doses from diagnostic X-ray (e.g. chest or dental), or security X-ray equipment. Multiple exposures to medical or airport equipment may result in sufficient exposure to produce a detectable colour change in the sensor.
- The irradiated sensor, above 1000 mSV, displays different colour shades under different lights and should be viewed under fluorescent light.
- The sensor has slight thermal activity and a service life of two years at room temperature (25°C/77°F).
- The sensor develops faint colour advancement upon exposure to UV/sunlight for an extended period, approximately two days.
- Avoid prolonged exposure to sunlight and heat.

ComRAD - 1000

Handheld metal and gamma radiation detector

Functions :

The new model CoMRad-1000 is an easy to use hand held metal detector with additional function to detect and locate radioactive substances in scanned baggage and personnel. During just single scan the CoMRad-1000 allows simultaneous detection of metals and radioactive substances.
Thus, substantially saving clearance time, number of instruments used at the point of checking and improving security. The unique operational advantage of the CoMRad-1000 differentiating it from any existing analogues is its sensitivity of gamma detector, that make the instrument compliant with ANSI N42.32 standards for personal radiation detectors (PRDs) used in homeland security

Typical applications :

- Airports and seaports
- Custom and border protection
- Events and building security
- Critical infrastructure protection

Three colour LED Indication :

- GREEN - ON
- BLUE - Gamma alarm
- RED - Metal alarm

Energy Range from 0.015 to 3.0 MeV
Temperature Range from -20 to 55°C
Alarm Response time < 2 sec

Knife ~150 mm
Pistol ~200 mm
Magnetic plate 100x100 mm ~200 mm
Lead container ~200 mm

Minimal Metal Detection Distance in the Air

HZS Internal Exposure Dosimeter

Technology :

The MiDA-5 is designed as a personal dosimeter of internal exposure caused by inhalation of alpha and beta radioactive particle. It also operates as Continuous Air Monitor (CAM) by measuring volume activity of radioactive airborne particles as well as Equilibrium Equivalent Concentration (EEC) of Ra-222 and Ra-220 progeny in real time. Providing audio and visual alarms when present thresholds are exceeded.

The monitor has a compact and lightweight design for easy carrying during performance of day-to-day or emergency response duties.

The MiDA-5 continuously samples air drawn to the monitor and measures activity of alpha and beta particles deposited from air on the filter media. The advanced measurement algorithm then calculates the personal exposure received by the operator during his work hours.

The MiDA-5 is supplied with individual or collective charger/dock station. When placed in the dock the instrument automatically charges the battery and transfers all collected data to the PC or centralized personnel exposure management system using industry standard RS-485 Modbus RTU interface.

Making MiDA-5 the ideal solution for the collective use and system integration. When installed in the dock station, the MiDA-5 can also run in continuous mode with pump on thus working as unattended CAM. Reduced service life can come from overexposure to heat and UV/light.

Continuous Air Monitor and Personal Dosimeter of Internal Exposure to Alpha and Beta Radioactive Aerosols

General :

Detector: Solid-state ion-implanted silicon with 450 mm^2 active area
Pump: rotary vane, 1.0 LPM at no load
Filter: Ø 25 mm PTFE membrane
Battery lifetime: not less than 8 hours at normal operation conditions
Calibration: with electro-plated stainless-steel sources
Communication interfaces: RS-485 Modbus, USB
Housing ingress protection: IP67 (except air sampling head).

Environmental :

Temperature range: -10°C to +50°C
Humidity: up to 95%, non-condensing
Size: 79 mm x 35 mm x 160 mm

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HZS Drone Radiation Mapping

Personal Radiation Dosimeter

UAS ATL X-8 is configured and equipped for automatic search, localization and identification of gamma radiation sources. In addition, the UAS is equipped with a 3-axial (visible/infrared) camera with the controlled gyro-stabilized hanger

Functions :

- Radio channel range : up to 5.5 km
- Flight altitude above sea level : up to 3000 m
- Maximum speed of flight : 25 m/s
- Allowable wind speed in hovering mode : 12 m/s
- Flight altitude over the surface : up to 100 m
- Maximum UAV operation time : 60 minutes
- Takeoff/landing from on unprepared spot : 5x5 meters
- Accuracy of running coordinates determination during satellite navigation system's operation GPS/GLONASS, does not exceed :
  a) on spot coordinates : 2.5 m
  b) on height : 2 m
- Operational temperature range : from -25°C to +55°C
- Maximum relative air humidity : up to 98%

Estimated total life of the UAIS is no less than 2000 flying-offs-boarding's or 1000 hours during UAIS's service life of 5 years

CBRN Decontamination

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HZS E-Spray Decontamination Kit

Revolutionary electrostatic technology combined with the most advanced decontamination/ disinfection formulations for the next step in surface treatment

Power of Electrostatics :

E-Spray Decontamination Kit features a cordless, light weight, electrostatic sprayer gun.
The patented technology adds electrical charge to the decontamination/ disinfection liquid prior to dispersal at surfaces to be treated.

The gun allows user to select between three droplets size ranges of 40/80/110 microns to ensure the optimum dwell time for the decontamination/ disinfection formulation used. The same way the user controls the amount of liquid applied and the time duration the treated surface remains wet.

Once airborne, lightweight and identically charged decontaminant/ disinfectant droplets repel each other spreading in areas unreachable by spraying form the conventional sprayers.

The electrical phenomenon pulls the droplets toward all surfaces within the range. The electrical surface pull is many times stronger than the gravitational. As the result, the droplets hit the surface in an even spread completely enveloping the target surface without dripping.
Such effective treatment of three dimensional surfaces is generally not possible without use of a liquid adhesion technology like electrostatic.

The most compact and versatile decontamination kit on the market combines the following :

- Handheld, cordless electrostatic sprayer gun.
- Three component Chemical/ TIC/ Biological Warfare Agent decontamination solution based on environmentally friendly, non-chlorine DF-200 formula.
- High level disinfectant-cleaner based on the most advanced Accelerated Hydrogen Peroxide formulation.
- Low level disinfectant-cleaner based on Quaternary Ammonium Compounds.
- Emergency eyes and skin decontamination solution for corrosive chemical agents.
- Decontamination mitts and wipes made of a hyper absorbent material with immobilised decontaminants for chemical and biological agents.
- Absorption wipes for hazardous materials.
- Shock and environmentally resistant transport case.

- Safe for user
- Safe for Environment
- Non-corrosive
- Highly effective
- Inherently biodegradable

Three Component Decontamination Solution for Chemical (CW/TIC) and Biological (BW) Agents :

The decontamination solution is based on patented DF200 formula originally developed by Sandia National Laboratories for the US government.

This formulation is one of the best available technologies for a full-spectrum chemical and biological decontamination.

Three components are supplied in pre-measured doses to be mixed directly in the decontamination tank of the electrostatic sprayer.

HZS E-Spray kit expertly leverages the formulation by applying it with the electrostatic sprayer.

HOTZONE SOLUTIONS

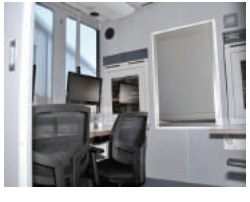
HZS CBRNE Scene Management

HZS Incident Command Vehicle

HOTZONE RESPONDER
Incident Command Vehicle

Incident Command Vehicle is the mobile administrative and communication post built for a fast deployment.

It has relatively small footprint for optimum maneuverability and to facilitate movement on public highways. Ergonomic design guarantees comfort for the crew.



HZS Sphynx

Incident Support Tool

Modular software tool for full onsite support for officers-in-charge of various incidents, including hazardous materials. Complete information system to dispatch, manage and document responder services.

A perfect tool for training, planning and managing incidents.
Rugged devices (like tablets) can be interlinked to share on scene information, mission orders and reports in real time. Especially designed for fire orders, but adaptable to all other first responders' services.

Incident related information like route planning, check-lists, water supply maps and hazmat databases as well as object related information like alarm plans and special danger notes can be prepared in advance.

On-site location maps with real-time documentation, hazmat dispersion calculations and documentation with timeline analyses are available.

An integrated instant messaging system allows the exchange of information (like detection) between linked devices beyond overloaded radio systems. From the point of dispatch to the final report, SPHYNX supports all steps of a mission.

Complete
Complete information for each kind of incident

Real-Time Information
Online connection, current data and linkable devices

Customised
Fully adaptable to individual needs, Including language setting

HOTZONE SOLUTIONS

HZS CBRNE Instructional Equipment

CWA Simulant Kit

Adding realism to simulation

The CWA-SIM Kit introduces a new generation of realistic chemical simulants for the nerve agents' sarin (GB), VX, and sulphur mustard (HD). The simulants are specifically developed to simulate environmental behavior of corresponding chemical warfare agents (CWA) in respect to the appearance and detection response on the three mainstream field detection technologies. The CWA simulants are easy to use, safe for the user and environment, and biodegradable.

The CWA-SIMs are conveniently delivered in 20ml bottles, with field transport box and two user-selectable applicator options. The special bottle closure dispenser allows the user to apply the simulants in equal drop volumes. The cap with brush allows precise application of the simulants over a surface or in hidden spaces. The simulants applied on a non-porous surface provide a realistic representation of the corresponding CWA in respect to the viscosity and drop formation. They do not only look like the authentic CWA, but also match the agents' response with ion-mobility spectrometry (IMS), flame photometry (FP), and paper colorimetry based CWA detection technologies.

CWA are highly toxic chemicals, subject to strict national and international regulations guiding their production, storage, transfer and use. Only a handful of sites worldwide handle CWA, very few in an open environment. Realistic CWA simulants are chemicals or chemical mixtures that have been carefully tailored to look like the real agents, they create the same response on a majority of detection technologies available, and are safe to handle and dispose of.

The CWA-Sim Kit is the result of many years of "live agent" training experience, laboratory research, and field validation trials. Each SIM presents a mixture of chemicals having dedicated purposes such as:

- Detection trigger - active components causing the response on selected chemical detection technologies, closely mimicking the authentic CWA in terms of the response type, response time and signal strength.

- Thinners and/or thickeners - the solvents that adjust the viscosity, the drop formation, or the general appearance of the SIM to look like the authentic CWA.
More importantly, these components control the airborne concentration of the detection triggers creating more 'realistic' CWA simulations.

- Fluorescent tracer - an additive that emits visible light when irradiated by the UV lamp supplied. This enables fast safety distinction between the simulant and corresponding authentic CWA, as both produce the same response on the detection technologies. Fluorescent tracer also enables simulants use in training scenarios focused on cross-contamination and contamination control.

Mac7 Kits

Functional IED Training Lane Kit

This reactive/functional IED Trainer Kit is specifically designed to support platoon level IED training when IED training lanes and ranges are occupied or unavailable.

Everything needed to easily conduct realistic training scenarios in any environment is included. Focusing on simplicity, this kit is quickly understood and very easy to set up and operate. The modular penalty box unit is capable of monitoring any other the switches included as well as switches you may already have.

The Functional IED Training Kit is an excellent addition to your training aids already in use. The penalty box included emits a loud siren, and this kit is also entirely compatible with our IED blast simulator.

Features :

- Automatic 30sec safe separation (arming) delay
- Automatically detects open or closed circuit when arming and fires upon any change
- Penalty siren and lights indicate for 30sec (can be custom set to you needs when ordering)
- Automatic circuit reset for seamless next mission evolution
- Modular design allows a single penalty monitor to work with any switch
- Color coded input jacks makes every set-up extremely simple

Included in Kit :

- Penalty box monitor (lights and loud siren)
- Two, fifty foot command wire reels (connects to make 100' feet)
- Power connectors for 9 Volt Batteries
- 9 Volt Batteries included
- Jar containing deluxe det cord, time fuze and blasting caps
- Detailed instructions for each device
- Large, Storm/Pelican storage & transport case with wheels

Chemical Ordnance & IED Training Kit

This Reactive / Functional IED Trainer Kit is specifically designed to support Platoon Level IED training when IED Training lanes and ranges are occupied or unavailable.

The kit includes everything needed to easily conduct realistic training scenarios in any environment. Focusing on simplicity, this kit is quickly understood and very easy to set up and operate.

Penalty Features :

The Explotrain® Model X-0HW™ IED Simulator provides very realistic and effective explosive battlefield effects to safely train our troops.

The simulated explosion sound produced by the X-0HW™ result in a 120dB blast that trainees will both hear and feel, allowing you the necessary realism required for your training needs. Despite the loudness of the Model X-0HW™, it is safe to use near buildings, windows and personnel.

In just minutes you can attach a Model X-0HW™ IED Simulator to the outside of a building or vehicle and interface with one of our wireless systems, connect it to a laser system to register an RPG hit, or wire it to a pressure switch in an IED production facility to recreate the threats your troops will find in theatre.

Included in Kit :

- Penalty Box Monitor (Lights and LOUD Siren)
- Two, Fifty Foot Command Wire Reels (connects to make 100' feet)
- Power Connectors for 9 Volt Batteries
- 9 Volt Batteries Included
- Jar Containing Deluxe Det Cord, Time Fuze, and Blasting Caps
- Detailed Instructions for Each Device
- Large, Storm / Pelican Storage & Transport Case w/ wheels

Chemical Improvised Dispersal Devices

Familiarize detection teams with the visual and tactile properties of the most dangerous Chemical Warfare Agents and help responders recognize them easily during the course of their work. Implementation of CWA simulants, combined with realistic ordnance and IEDs provide unparalleled training

- Chemical ordnance with integral containers for liquid simulants that can be implemented into "Leak, Seal, Pack" training scenarios.
- Ordnance can be reconfigured into IEDs using the included inert explosives, detonators, & switches.
- Improvised devices with a variety of switches can utilize liquid dispersal or IED configurations, including time, victim, or command operation.

Benefits include :

- Identical look, feel, and behavior to the real chemicals.
- Detection devices respond the same way as they would with real agent, such as Ion Mobility Spectrometers, Flame Spectrometers, or detection paper, eliminating the requirement to purchase expensive CBRNe training detectors.
- Provides highly realistic training not normally affordable, but absolutely essential for today's professional.

Included in Kit :

Each kit includes GB, HD, and VX Chemical Warfare Agent (CWA) simulants that provide an accurate detection response.

This next generation of simulants not only gives identical results on the majority of detectors, but they also react accurately on detection paper.

HOTZONE SOLUTIONS

HZS CBRNE Platform Integrations

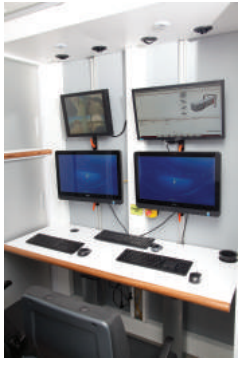
HZS Deployable Analytical Laboratory 2

Deployable Analytical Laboratory 2 (DAL2) is a fully customised solution that can be configured, equipped and optimized for the following:

- Sampling of environment, bulk materials, tissues and food.
- Biological analyses of pathogens and toxins that may cause moderate-risk, serious or potentially lethal disease through the inhalation route of exposure. Microbiological analyses pinpoint pathogens on a genetic level, ensuring the most reliable detection of bacteria and other microbes on the market.
- Chemical analyses for highly toxic chemicals such are chemical warfare agents (CWA), and toxic industrial chemicals (TIC), low molecular weight biotoxins, in all kinds of matrices.
- Radiological analyses of environmental, bulk and food samples.
- Sample storage and transport.

DAL2 features Chemical/ Radiological and Biological BSL-3 laboratories separated by an airlock. The whole construction is crafted from a one piece superstructure, pressurized in accordance to the safety regulations. Ambient and ventilation system are controlled, air exhaust is HEPA and carbon filtered. DAL2 provides the personnel, the testing material (samples) and the environment protection from hazardous materials such as highly toxic substances and the broad spectrum of indigenous moderate to high risk bioagents causing serious or potentially lethal disease. DAL2 can achieve decontamination of both, the equipment and the personnel to a permissible level.

DAL2 is delivered as the complete solution that includes comprehensive training package in respect to sampling and analysis procedures, personal protection and emergency decontamination procedures, as well as the complete DAL2 system training and proficiency testing.



Multipurpose CBRN VIP Protection vehicle

Multipurpose CBRN VIP protection Vehicle is a self contained security platform configured and optimized for :

- Fast deployment.
- On the spot CBRNE threat assessment.
- Basic and rapid food safety check for common inorganic food poisons, pathogens and radioactivity.
- VIP extraction from a hotzone.
- Personnel CBRN decontamination.
- Provision of immediate medical help (basic trauma and CBR).
- Individual CBRN protection.
- Fast scene evacuation, ballistic protection.

HOTZONE GUARDIAN
Multipurpose CBRN VIP Protection Vehicle

Rapid Response Vehicle

Rapid Response Vehicle is configured and equipped for :

- CBRNE detection.
- Small scale immediate and personnel CBRNE decontamination.
- Personnel protection.
- Area cordoning.
- CBRNE sampling.

RADSense Vehicle

RADSense is a fully customised solution to meet various needs and concepts of operation in environmental radiation measurement. It can be used for monitoring, early warning and emergency response in urban and rural environments with a risk from radioactive hazards.

The mobile laboratory contains a full array of particle sampling and monitoring/measuring equipment for alpha, beta and gamma emitters.
All equipment inside RADSense is networked to centralise and store combined records of measurements.

Point of Access Security Scanner

Point of Access Security Scanner (PASS) is a self contained security system for outdoor deployment. The security screening and operator areas are built int a mobile platform - van for use under all weather
conditions.

The security system comprises of a full body X-ray scanner for personnel screen and a compact X-ray inspection system for screening of hand bags and parcels.Optionally, both scanners are integrated with a highly sensitive radiation monitor/ identifier. Flow-through screening principle and high scanning speeds reduce holdup times when taking care of security of high volume events.

HOTZONE GUARDIAN
Point of Access Security Scanner PASS

Decontamination Vehicles

Hotzone Responder decontamination series offers range of vehicles with proven designs based on cutting edge airport firefighting vehicles.

In addition to a range of decontamination equipment, the vehicles can carry high capacity decontaminant reservoirs.

Sea Sight Buoy

Gamma Buoy is an offshore radiation warning system for monitoring gamma radiation at/under/above water line.

The rugged, lightweight buoy is made from UV stabilized polyethylene. It is rotationally molded to form a seamless body 9.5 mm thick. An increased thickness is added at major stress points.
Optionally, the patented antimicrobial plastic is offered for the exceptionally long service life and low maintenance.

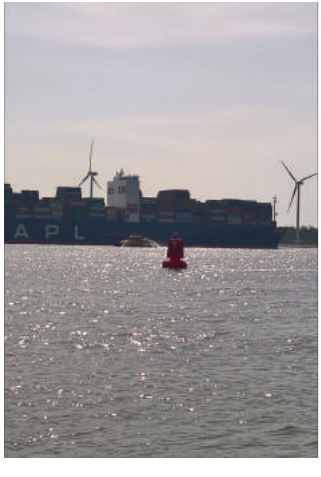
The buoy is equipped with communication link, weather station, solar panels and the Intelligent Gamma Probe System that is hermetically sealed, constant self-testing and resistant to sinusoidal vibrations.

Default configuration of Gamma Buoy communicates following data:

- Radiation dose rate.
- Counts per second.
- Wind direction and speed.
- Temperature.
- Water current direction and speed.

Components:

- Technical Compartment
- Solar Panel
- Batteries Compartment
- Monitored Lantern (Led)
- Radiation Detector (gamma rad)
- Radiation Detector (radioactive cloud)
- Counter weight
- 4 Quarters of Floats
- Tube Polyethylene (Antibacterial option)



HOTZONE SOLUTIONS

Environmental Solutions

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Hazardous Material Treatment Unit (HMTU)

Hazardous materials treatment units are unique and compact solutions delivered as a fully integrated into a vehicle (mobile version - MHMTU)
or a skid mounted to fit into 20 feet general purpose shipping container (transportable version - THMTU).

Both, MHMTU and THMTU employ plasma torch to destroy or convert:

- Chemical waste, including PCBs, mineral oils, plastics, heavy metals, asbestos, pesticides,
- Highly toxic chemicals, including chemical warfare agents,
- Medical and bio waste,
- Radioactive waste (compacting),
- Industrial sludge.

The plasma torch uses air as a resistive heating element to convert electricity into heat. Resulting plasma is heated to temperatures in excess of 5000°C. Such high temperatures normally lead to complete destruction of all known organic and many inorganic hazardous waste materials to atoms and the simplest molecules.

The units can be powered from the grid or by diesel generator for complete operational independence.

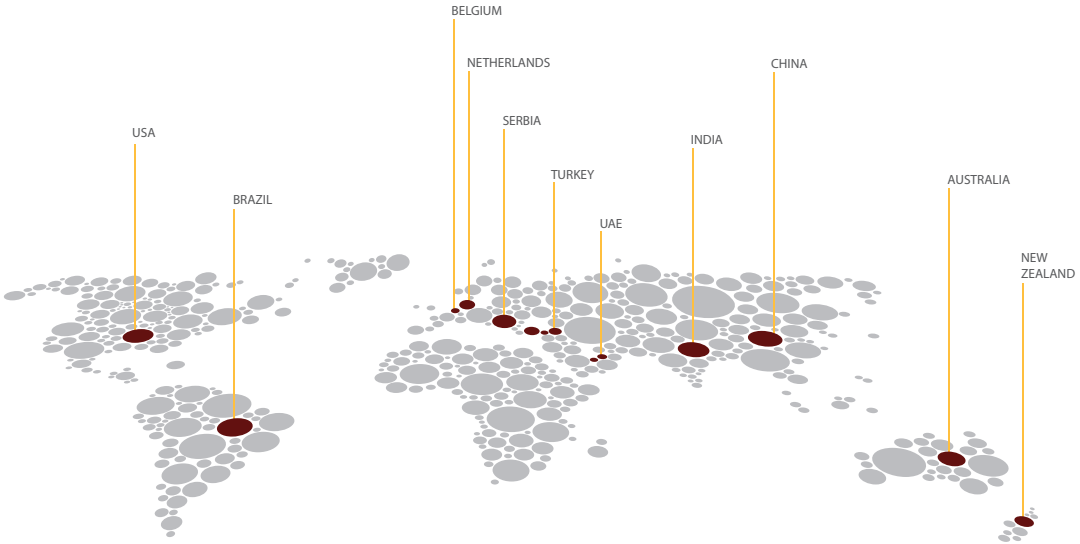
Contact Us

HOTZONE SOLUTIONS

Prinsessegracht 6, 2514 AN,
The Hague, The Netherlands.
T +31 70 262 97 04
F +31 (0) 87 784 68 26
E info@hotzonesolutions.org
W www.hotzonesolutions.org

BELGIUM

ICI,Rue de Sart-Dames-Avelines, 8A
6210 Frasnes-lez-Gosselies,
Belgium
T +32 (0)71 820 840
Yves Dubucq:
yves.dubucq@hotzonesolutions.org
yves.dubucq@ici-belgium.be



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