Mobile Platforms Capability Brochure

The Gold Standard in CBRNE Detection Solutions
Choose Innovation – Choose Bruker

Bruker is recognised as the leading authority on detection and identification technologies that mitigate the threat from toxic agents and harmful materials. These threats can encompass chemical weapons, toxic chemicals, biological agents, radioactive materials and improvised explosives, all of which can devastate lives, threaten infrastructure and destroy property.

Bruker develops, manufactures and supplies technologies worldwide for a diverse number of clients that include most of the world’s Militaries, Emergency Responder teams, Police Forces and numerous civilian clients that include security firms and safety teams.

We also supply many of our technologies to government departments, commercial enterprises and multi-national corporations who need to protect their employees and their clients from the threat from terrorism or from the accidental release of toxic materials.

Bruker is strongly committed to meeting its customers’ needs by continuing to revolutionise the design, manufacture and distribution of detection tools based on our core technologies; by providing cost-effective solutions that are regarded as the ‘Gold Standard’ by threat mitigation experts.

CBRN Detection with Mobile Platforms

WHY MOBILE PLATFORMS

An adequate response to a CBRN incident must ensure that threats can be rapidly detected, the nature and scale of the threat can be identified, and appropriate protection and decontamination measures can be taken. Meeting the market’s requirements, mobile platforms are offered in many configurations and this capability document sets out to illustrate how various platforms can be equipped with CBRN detection technologies.

MOBILE PLATFORM SOLUTIONS

Bruker Detection can act as a prime contractor for many of the fully equipped mobile platforms in this document. In the case of maritime vessels, our vast experience of the overall requirements allows our technologies to be readily integrated with these ships during the construction phase. In this way, a complete, fully operational system can be delivered to the client.

Systems integration is simplified not only through our significant experience but also by the provision of compact products that fit any platform. Bruker products and systems have low power requirements and integrate readily with planned and current communications packages.

Please request the individual brochures for the Bruker detector technologies featured in these pages, along with our Capability Brochure. This latter brochure illustrates more examples of the deployment of our technologies to mobile platforms in general.
The typical requirements for light reconnaissance vehicles are met by

- Bruker RAID-M series products detect, identify and quantify all CWA (Chemical Warfare Agents) and several critical TIC (Toxic Industrial Chemicals). These lightweight, battery-operated portable detectors can be stowed in an anti-shock mount and applied rapidly when the occasion demands.

- Bruker RAID-XP series products detect identify and quantify all CWA (Chemical Warfare Agents) and several critical TIC (Toxic Industrial Chemicals). RAID-XP series can be mounted permanently in the vehicle and sample the atmosphere continuously for the presence of toxic gas and vapour threats. In addition, RAID-XP includes a fully-integrated gamma radiation detector that provides dose and dose rate data.

- Bruker µRAID is a small, compact, battery-operated personal CWA/TIC detector that is small enough to be worn on the uniform. µRAID offers a series of detection libraries which can be customised for specific deployments.

- Bruker SVGps is a hand-held radiation survey meter that detects alpha-, beta-, gamma- and x-ray radiation simultaneously and is ideal for locating threats from ionising radiation. The utility of the SVGps is further enhanced by the inclusion of an integrated GPS/GLOSNASS module linked to an internal data logger so that radiation data is associated with map coordinates.

- For dedicated gamma dose rate measurements, the Bruker Radiation Probe mounts to the vehicle’s exterior and feeds the radiation information directly to the vehicle’s data system over RS422.

- Capable of identifying thousands of substances, MM2 is a military-hardened, mobile GC/MS system, whose design consolidates over 35 years of Bruker experience in applications of mobile mass spectrometry. Novel features include the ability to operate while the vehicle is underway and a design that removes the need to carry cylinders of bottled gases.
Heavy Reconnaissance Vehicles offer a greater payload capability so that the deployed CBRN detection suite can be significantly enhanced.

- Bruker RAID-S2 is integrated to protect the operators from filter breakthrough when a Collective Protection (ColPro) active air filter system is installed on the ventilation inlets. It continuously samples the air outside the vehicle, and in the event of a threat being detected, the RAID-S2 switches automatically to sample the air passing through the chemical filters. If breakthrough is detected, the system alarms quickly to give the crew the chance to don protective equipment and to continue with their mission.

- Bruker RAPIDplus is a second-generation passive standoff detector, designed to detect and identify clouds of toxic chemicals at distances up to several kilometres. A spatial scanner, mounted on the top of the RAPIDplus offers operator-selected coverage of the target region, rotates through a full 360° with an elevation of between +50° to -10°. Thanks to a comprehensive database in the software, over 100 chemicals can be identified in seconds.

- Capable of identifying thousands of substances, MM2 is a military-hardened, mobile GC/MS system. Key to its successful deployment in many mobile applications is its fast-start-up and that the instrument can be operated even when the vehicle is underway. The MM2 Air/Surface probe penetrate the skin of the vehicle and an operator can chose to detect threats in either the external or to sample the terrain beneath it.

- For dedicated gamma dose-rate measurements, the Bruker Radiation Probe mounts to the vehicle’s exterior and feeds the radiation information directly to the vehicle’s data system over RS422.

- Stored internal to the vehicle, Bruker hand-held RAID-M Series and Bruker µRAID detectors are ready to deploy at a moment’s notice to detect and identify CWA and TIC. For locating threats from ionising radiation, the Bruker SVGps is a hand-held radiation survey meter that detects alpha-, beta-, gamma- and x-ray radiation simultaneously.
Deployable Laboratories provides a much-needed immediacy to the generation of critical data about the threat at hand. The majority of samples can be analysed immediately to laboratory standards, without the delays being caused by shipping potentially hazardous substances to a central facility. Depending on the requirements the configuration may allow for additional facilities such as an entrance air lock and a decon shower, glove boxes for safe sample ingress/egress, and a generator section for producing power. Externally, provision may be made for a fume hood, racking for gas bottles and even a biological air sampler to collect particulates that can be analysed in the deployable facility.

- For mobile facilities deployed in the hot zone, a Collective Protection (ColPro) active air filter system is installed on the ventilation inlets to detect filter breakthrough. Where hot zone deployment is not required, RAID-S2 can be configured to detect chemical threats in the air outside the laboratory.

- Bruker pBDi is used for the detection of biological threats, and is regarded as a universal detector for toxins, bacteria and viruses, where up to six agents can be identified directly within twenty minutes. pBDi is quick and easy to use, even for non-biologists. Depending on the client requirements, this technology can be used in a glove box or on an open bench.

- Bruker Alpha is a compact solid/liquid chemical identification system based on our established FT-IR technology. Coupled with a proprietary Bruker diamond sensor, which is highly resistant to most chemicals including strong acids and strong bases, Bruker Alpha can identify a vast range of chemicals with consummate ease.

- A high-performance Bruker GC-MS system allows the in-depth analysis of hundreds of thousands of substances and can identify different substances within a sample. With supplemental techniques, samples can be identified from any phase including solids, liquids, and gases.
Determining the best way to protect your naval assets by mitigating the impact of toxic chemicals, chemical warfare agents and radiation, is a matter that needs to be considered carefully. Bruker is the acknowledged world leader in the design, development, configuration and supply of detection technologies created specifically for maritime deployment. Our products are deployed on both surface vessels and submarines, and navies around the world choose Bruker Detection solutions to help protect their most critical assets.

- Protecting the citadel occupants from all chemical weapons, the Bruker RAID-S2 detector system is configurable to meet your specific requirements and can be used to give an early warning of breakthrough in the CBRN filters.

- The Bruker RAPIDplus is a passive standoff detector system gives an early warning of threats from a safe distance. Almost instantaneously, it detects clouds of Chemical Warfare Agents (CWA) and clouds of Toxic Industrial Chemicals (TIC) - both in vicinity of the vessel and at distances measured in kilometres.

- The Bruker Radiation Probe is a gamma dose-rate detector that mounts to the superstructure and has IP66 protection. This new generation, semiconductor-based system, sends data over RS422 directly to the vessel’s IT system without special interfaces.

- Lightweight detectors, including the Bruker µRAID body-worn CWA/TIC detector, the RAID-M 100 hand-held CWA/TIC detector and the Bruker SVGps hand-held radiation survey meter all have roles to play in optimising your Nuclear/Chemical threat response.

For individual product information, please request our detailed Product Specification Sheets (PSS).

Integrated Maritime NC-Detection Solutions

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Optional hand-held and personal detection devices:
The utility of CBRN detection solutions within an airborne context is highly dependent on the platform used. Conventional helicopters can take a significant payload whereas the deployment of detection systems on a UAV need to be considered more carefully.

- For deployment on a helicopter, Bruker RAPIDplus is ideal. This is a second-generation passive standoff detector, designed to detect and identify clouds of toxic chemicals at distances up to several kilometres. A spatial scanner, mounted on the top of the RAPIDplus offers operator-selected coverage of the target region, rotates through a full 360° with an elevation of between +50° to -10°. Data on chemical clouds is overlaid on a video image of the region of interest and changes in the concentration in the chemical clouds are tracked in real time by means of a supplemental live video feed. Thanks to a comprehensive database in the software, over 100 chemicals can be identified in seconds.

- Anti-vibration mounts are available for the RAPIDplus, which enables it to be mounted adjacent to an open door and angled down to the region of interest. The spatial scanner, controlled through the software, is then guided by the operator to ensure adequate coverage of the chemical cloud - even at significant distance. Importantly, none of the data collected by RAPIDplus is affected by the downwash of the helicopter blades.

- Smaller vehicles such as UAVs and drones have limited payload capabilities and the need for chemical detection must be met by low mass systems. µRAID is a compact, lightweight CWA/TIC detector that weighs less than a kilo and which can be coupled with a lightweight probe that extends beyond the front of the vehicle. Importantly, µRAID offers multiple libraries so that it can be reconfigured quickly to detect different substances when there is a change to the mission profile.
These civilian platforms operate under many different names including Analytical Task Force and Emergency Response Vehicles, but their remit is invariably the same. They must provide an fast response to a CBRN incident to ensure that threats can be rapidly detected, and the appropriate protection and decontamination measures undertaken.

In a typical configuration:

- Wide-ranging substance identification is completed with a Bruker E²M mobile GC/MS system, which is capable of identifying thousands of substances. The design of this system removes the need to carry bottled gas and allows it to be used when the vehicle is underway. The novel Air/Surface probe can be used to detect threats in either the air around the vehicle or on the terrain beneath it.

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- Stored internal to the vehicle, the Bruker RAID-M series of hand-held instruments are ready to deploy at a moment’s notice to detect and identify CWA and TIC. To supplement the RAID-M detectors, the Bruker µRAID is a compact, lightweight, battery-operated personal CWA/TIC detector that is small enough to be worn on the uniform of personnel as they deploy from the vehicle.

- For locating threats from ionising radiation, the Bruker SVGps is a hand-held radiation survey meter that detects alpha-, beta-, gamma- and x-ray radiation simultaneously. The utility of the SVGps is further enhanced by the inclusion of an integrated GPS/GLOSNASS module linked to an internal data logger so that radiation data is associated with map coordinates.
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**Superior Detector Performance**
For highly sensitive detection, identification and quantification of chemical, biological, explosive and radiation threats. Superior performance and high reliability comes as standard.

**Applications Support**
Systems are configured to meet your needs and result from our detailed evaluation of your requirements.

**Standards & Compliance**
All our systems are manufactured in ISO9001 compliant factories; so you can be assured of superior quality and performance.

**Software & Data Systems**
Designed to industry standards on the Microsoft® platform, our software can be integrated with your security management software.

**Training**
User Training and User-Level Maintenance is part of our standard Scope of Supply. Our goal is simple; to minimise your cost of ownership.

**Low Maintenance**
All our systems are designed for extended maintenance periods and reduce the through-life-costs of your investment.

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