Maritime Detection Systems

- Nuclear & Chemical (NC) Detection Systems for the Protection of Naval Assets and the Environment
Choose Innovation – Choose Bruker

Bruker is recognised as the leading manufacturer of detection and identification technologies that help their users to mitigate the threat from the accidental or deliberate release of toxic gases, explosives and radioactive materials that could kill and injure military and civilian personnel.

We offer the world’s most comprehensive range of threat detection and identification solutions and can help you to assess how these can be best employed to protect your assets.

We develop, manufacture and supply technology worldwide for a range of customers and end users that need to protect society and those that defend society.

Our client base includes, but is not limited to governments, military users, maritime users, commercial enterprises and multi-national corporations who need to protect their assets and their people from the ever-increasing threat from terrorism and the activities of rogue states.

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

Maritime NC-Detection Capability

The Threat
Within the context of the latent international crises, the threat resulting from the release of CBRN material such as Chemical Warfare Agents (CWA), Toxic Industrial Chemicals (TIC) and Radiological and Nuclear Materials have been confirmed. Mitigation and protective mechanisms associated with these threat scenarios are challenging - especially in the context of Naval operations. Naval CBRN scenarios range from offshore to littoral operations as well as extending to harbour related activities. However, the key factor to mitigate the threat is always the same: prevent and protect!

Prevent and Protect
The character of any CBRN event does not allow for time-consuming decision-making processes. To sustain the full operational capability for a vessel in a CBRN situation, the preventive monitoring and screening of the vessel’s exterior is mandated. Based on this early warning capability the citadel airflow can be controlled; the status of the CBRN ventilation system is monitored to enable the early trigger of protective measures in case a hazardous situation is detected inside the ship.

Maritime NC-Detection Systems
With over 30 years of CBRN detection experience, BRUKER has developed a unique capability in maritime detection systems. Designed, configured and tested to be used in the extreme and harsh maritime environment, these systems focus on the detection of nuclear (radiological) and chemical material surrounding the vessel. BRUKER maritime NC-detection solutions permits the installation of highly customised configurations to any class of naval surface vessel or submarine. A standard BRUKER IT-module manages all sensor data and interfaces this to the ship’s management systems.

Pollution Control Vessels
For ships assigned to environmental protection tasks, a configuration can be made available that provides an enhanced analytical performance beyond a CBRN threat detection capability.
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 giving 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 all have roles to play in optimising your Nuclear/Chemical threat response.

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

detection@bruker.com
www.brukerdetection.com
RAID-S2 Plus
Protecting the citadel occupants by detecting all chemical weapons, the RAID-S2 detector is configurable to meet your needs. For example, by detecting breakthrough in the CBRN filter system, this product gives early warning of a toxic threat inside the citadel.

RAPID plus
The RAPIDplus is a passive standoff detector system that gives an early warning of toxic agents from a safe distance. Almost instantaneously, it detects clouds of Chemical Warfare Agents (CWA) Toxic Industrial Chemicals (TIC) - both locally and at distances measured in kilometres.

Radiation Probe
The Bruker Radiation Probe is a gamma dose-rate detector that mounts to the superstructure and has IP66 protection. This detector outputs data over RS422 and can be integrated directly to the ship's IT system.

IT System
The IT module of the Naval NC-detection system collects and manages the relevant sensor data, facilitates the operation of the sensor system, and provides an interface to the ship management system.

Light weight detectors, including the Bruker uRAID body-worn CWA/TIC detector and the RAID-M 100 hand-held CWA/TIC detector all have roles to play in optimising your Nuclear/Chemical threat response.

Detailed information on the products featured on this page can be found in our Product Specification Sheets (PSS), copies of which are available upon request.
The RAID-U2 Plus is used for detecting Chemical Warfare Agents (CWA) and Toxic Industrial Chemicals (TIC) in the atmosphere outside the submarine. The system is integrated to the boat using a bespoke sampling system designed exclusively for submarine applications. When the vessel first surfaces, atmosphere samples are drawn in via a telescopic pipe and initial CWA/TIC measurements are taken. When running at periscope depth, CWA/TIC measurements can be performed continuously on the outside air. Depending on the configuration, air samples can be drawn either from the telescopic pipe or from the snorkel.

**Radiation Probe**
Two Radiation Probes are used for gamma radiation detection; one inside and one outside the submarine. The external probe is configured to withstand the high pressures experienced when submerged.

**SVGps**
In nuclear-powered submarines, the battery-powered Bruker SVGps hand-held radiation meter can be deployed for general radiation detection duties.

A detailed technical study on the deployment of NC-Detection to submarines, along with detailed product information on the systems featured on this page, are available upon request.
The RAID-S2 Plus family of detectors are designed to detect very small concentrations of gaseous chemical substances in the air and to provide an alarm at a defined concentration level.

The E²M Mass Spectrometer system can identify over two hundred and ten thousand unique chemical compounds. It offers a valuable, high quality resource for maritime pollution identification / response control, giving laboratory-standard data from a robust, field-proven package.

The RAPID Plus passive standoff detector system is an enhancement to the standard configuration. It gives an early warning of toxic gas clouds from safe distances that can be measured in kilometres, as well as offering a localised detection capability.

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Bruker has support centres of technical expertise in every major area of the world providing sales, applications and engineering support for our complete product range. With more than 6,000 employees at 90 locations worldwide you can be confident that the support team fronts a uniquely integrated global resource. Research and development specialists, applications professionals and highly trained engineers in every field are dedicated to your investment in our equipment.

**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.