BRUKER DETECTION

Maritime Detection Systems

Nuclear & Chemical (NC) Detection Systems for the Protection of Naval Assests and the Environment

Innovation with Integrity

Choose Innovation – Choose Bruker

Bruker is recognised as the leading authority on the use of detection and identification technologies to mitigate the threat from the accidental or deliberate release of toxic gases, explosives and radioactive materials that could kill and injure civilians.

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 people and property.

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

These include, but are not limited to governments, commercial enterprises and multi-national corporations who need to protect their employees and clients from the ever-increasing threat from terrorism.

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 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

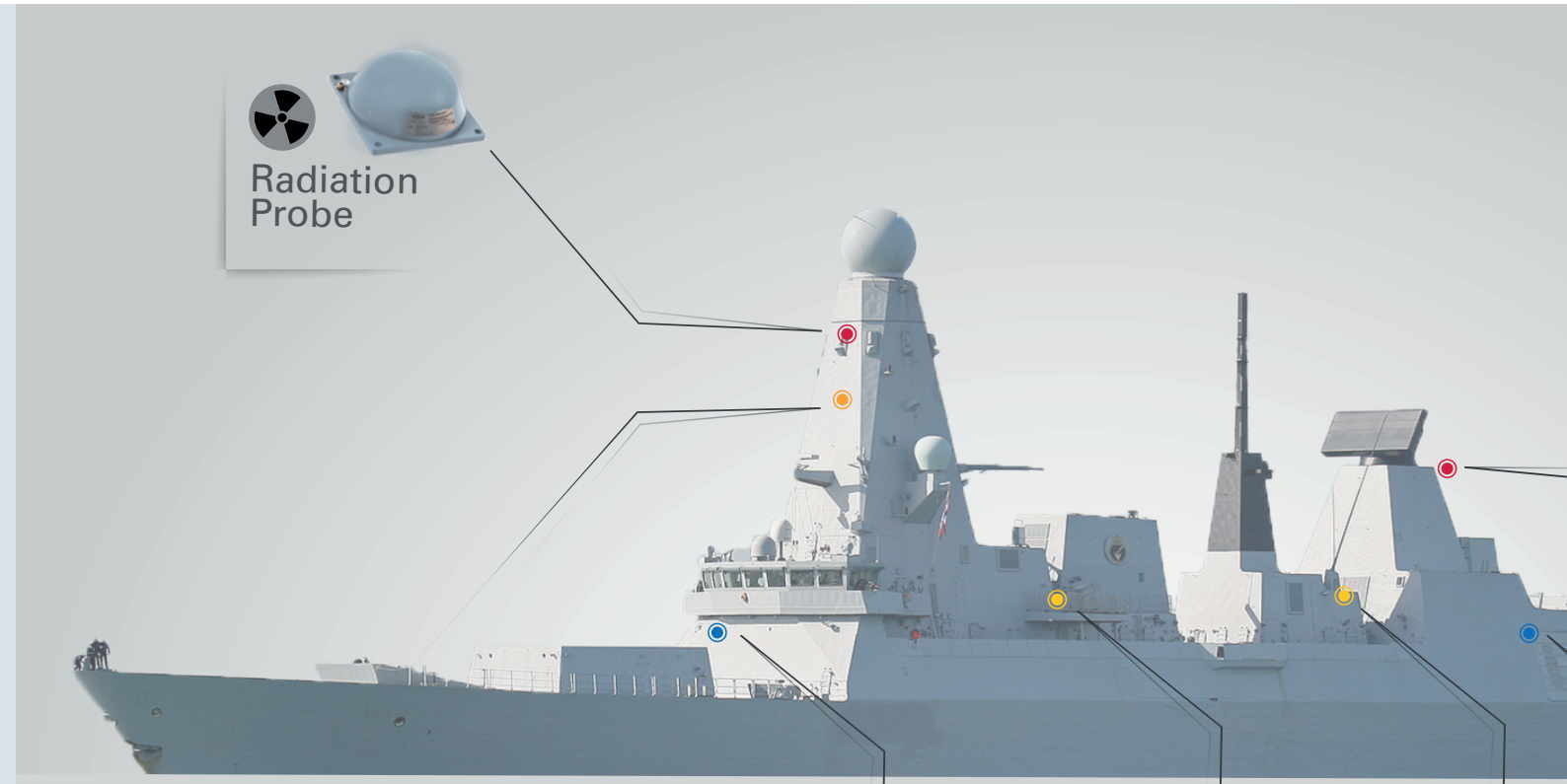
The character of any CBRN event does not allow for time-consuming decision-making processes. To sustain the full operational capability for a vessel in a CBRN situation, the preventive monitoring and screening of the vessel's exterior is mandated. Based on this early warning capability the citadel airflow 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.



Radiation Probe

RAPID*Plus*

RAID-M100

RAID-S2 MV*Plus*

RAID-S2 MV*Plus*

Optional hand-held and personal detection devices:

µRAID

RAIDM-100

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Chose an Integrated NC-Detection Solution

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 RAPID*plus* 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 vessle 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 uRAID 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.

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Warship NC-Detection Solutions

Bruker is the acknowledged world leader in the design, development, configuration and supply of detection technologies for surface vessels. Choose from the capabilities below to defend both your most valuable naval assets and their crew complement.

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 RAPID*plus* 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.

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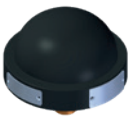
Submarine NC-Detection Solutions

The Bruker Submarine Nuclear and Chemical Detection System[SM] (SNCDS) is a highly-specialised, stationary system for the detection of nuclear radiation and chemical agents, which has been specifically designed for the demanding environment of submarine installations. It comprises a chemical agent warning system based on the Bruker RAID-U2*plus*, two radiation probes and further components and accessories. The chemical agent warning system operates through a snorkel system that has been extensively proven on multiple submarine installations.

RAID-U2p*lus*

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.

SVG*ps*

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

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Maritime Pollution Detection Solutions

Pollution Response, or Chemical Recovery Vessels with Bruker detection systems are deployed by many nation states to identify the toxic nature of pollution incidents, whilst protecting the crew complement and helping to manage post-event countermeasures.

A typical installation on a Chemical Recovery Vessel (CRV) comprises a combination of a Bruker RAID-S2 detector, a Bruker E2M mobile mass spectrometer, multiplex controlled sampling lines and a series of dedicated third-party electrochemical gas sensors to monitor specific chemical compounds.

The Bruker system surveys the air around the ship, as well as post CRV filtration, by means of five sampling lines. These take atmosphere samples from two external and three internal points, and operate continuously, 24/7.

RAID-S2*plus*

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.

E²M

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.

RAPID*plus*

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.

Global Resources – Local Focus

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 managementnsoftware.

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.

Bruker Optics is continually improving its products and reserves the right to change specifications without notice.
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