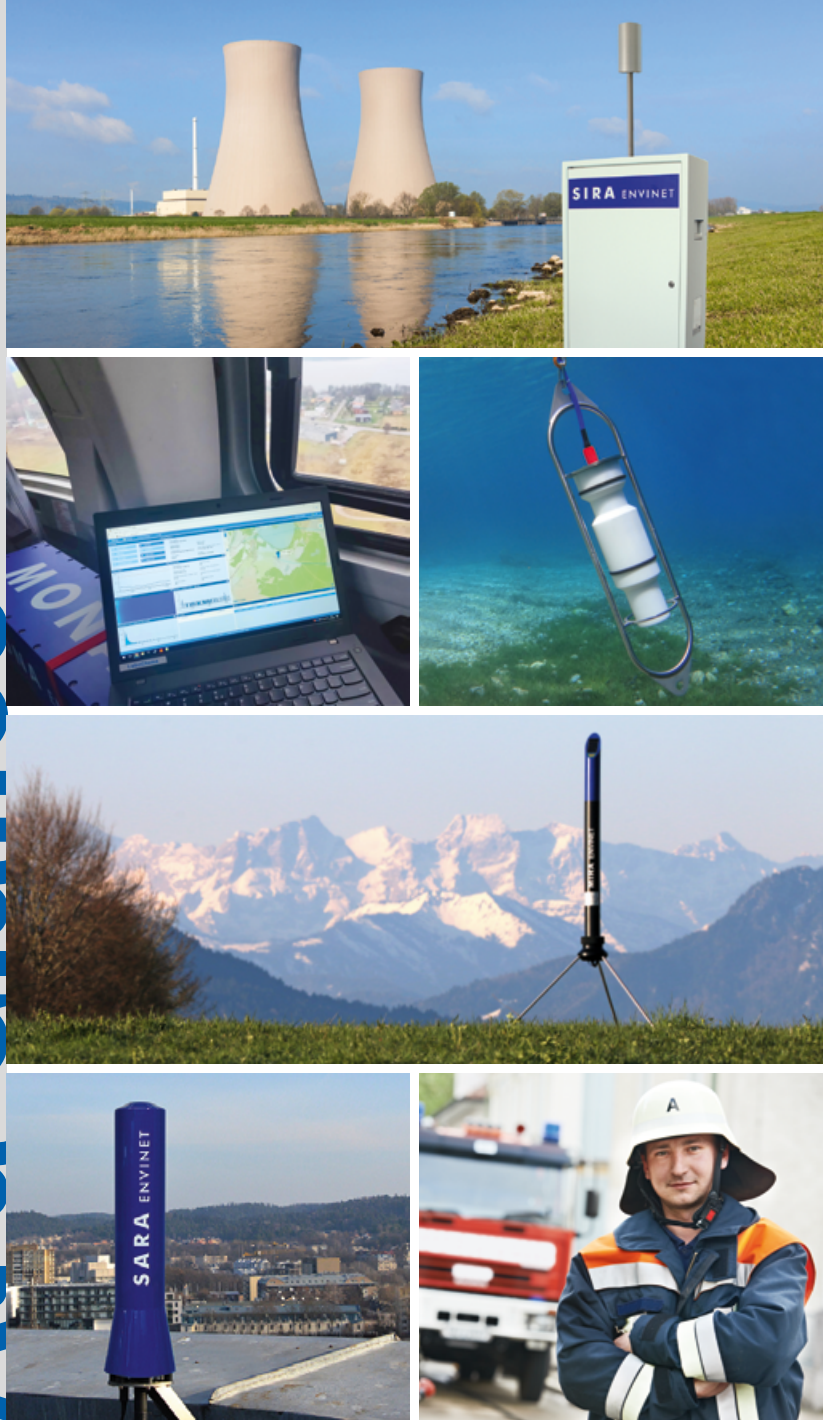


At a Glance



Comprehensive services since 1985

Scientia Envinet is the leading supplier of environmental radiation monitoring solutions. From single stations to ring monitoring and nationwide networks, we provide tailored solutions of the highest quality for routine monitoring, emergency preparedness and radiological incidents. We manufacture your stations, assist you with system design, customization, on-site installation, commissioning, maintenance, and staff training – we can even operate your whole network for you.

SCIENTA ENVINET AT A GLANCE

The applications of Scienta Envinet's equipment are as manifold as your ideas. Ring and nationwide monitoring networks as well as portal monitoring are typical examples, alongside mobile detection tasks. The modularity and flexibility of Scienta Envinet's stations offer a wide range of additional usage scenarios. Combined with its proven autonomy and reliability, the superior quality equipment offers almost infinite possibilities.

PORTAL MONITORING

Pedestrian, vehicle and cargo monitoring are important components in preventing illicit nuclear trafficking. Scienta Envinet offers customized solutions for homeland security.

AEROSOL MONITORING

SIRA is the combination of Scienta Envinet's tried-and-tested, reliable spectroscopic solution SARA with a world-renowned aerosol sampler. SIRA detects extremely low amounts of artificial radioactivity in the air.

NMC

The heart of your network. NMC is our highly scalable, web-based GIS solution for real-time monitoring of environmental parameters. NMC is optimized for radioactivity measurements but also accommodates data from meteorology, air and water monitoring.



MOBILE DETECTION

MONA is Scienta Envinet's mobile spectroscopic detection and survey family. It includes MONA-L for vehicles or aircraft, MONA-EPR for first responders, MONA-DRONE for short-range airborne detection, and MONA-BRD as a discreet backpack solution. The MONA systems are the ideal solution for mapping applications, the search for orphan sources, and rapid site surveys.

NATIONWIDE NETWORK

Sound early warning capabilities are the key to preparedness for radiological situations. Nationwide monitoring networks with up to several hundred stations are a key competence of Scienta Envinet.

WATER MONITORING

TUNA enables permanent spectroscopic online monitoring of gamma radiation, including automatic nuclide analysis, in water up to a depth of 500 meters. It is fully resistant to salt water.

RADIOXENON MONITORING

Earliest warning for nuclear accidents, surveillance of nuclear power plants and verification of the nuclear test-ban treaty require highly sensitive measurements of radioactive Xenon using the SAUNA products.

COMMUNICATION

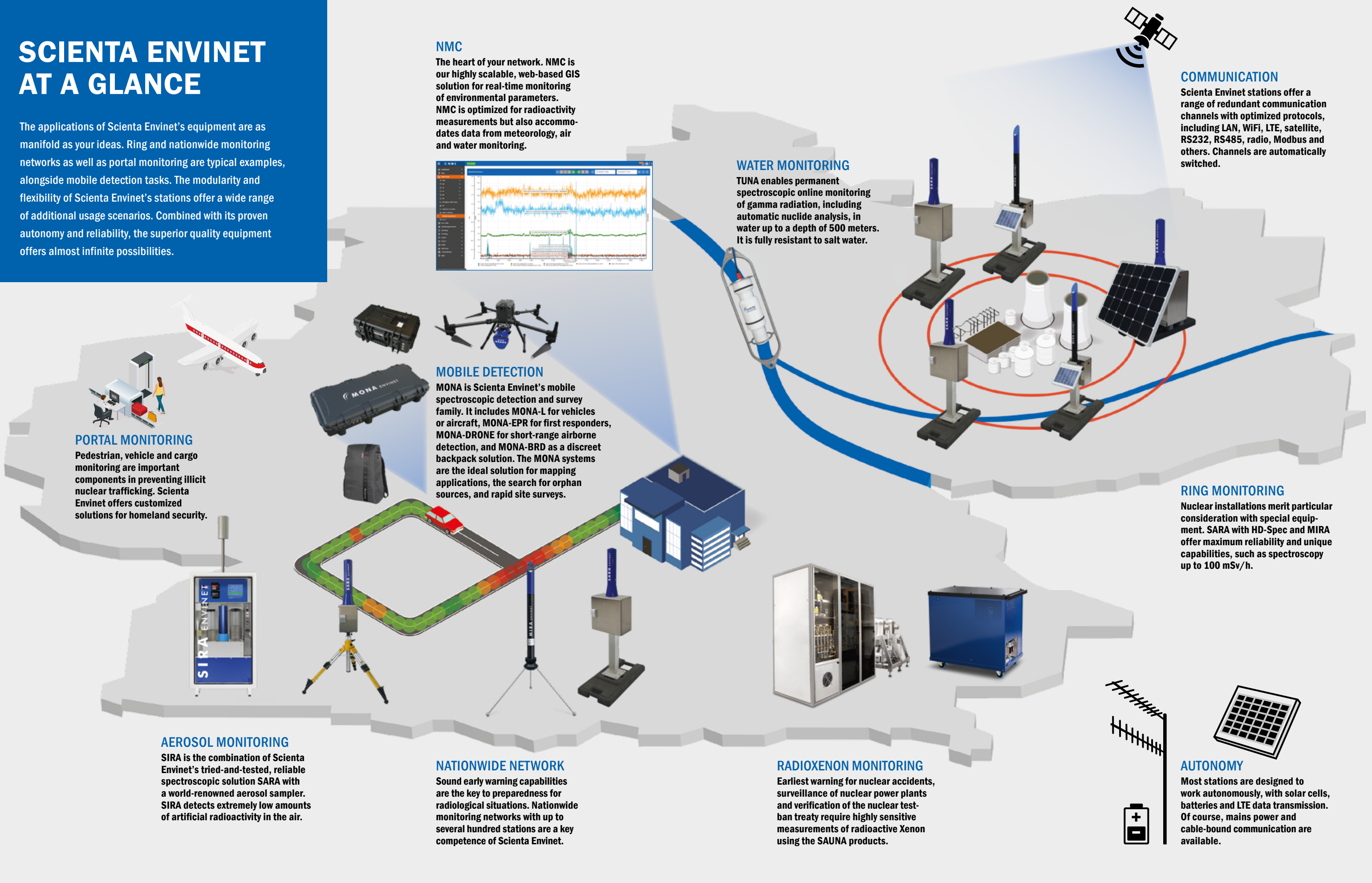
Scienta Envinet stations offer a range of redundant communication channels with optimized protocols, including LAN, WiFi, LTE, satellite, RS232, RS485, radio, Modbus and others. Channels are automatically switched.

RING MONITORING

Nuclear installations merit particular consideration with special equipment. SARA with HD-Spec and MIRA offer maximum reliability and unique capabilities, such as spectroscopy up to 100 mSv/h.

AUTONOMY

Most stations are designed to work autonomously, with solar cells, batteries and LTE data transmission. Of course, mains power and cable-bound communication are available.



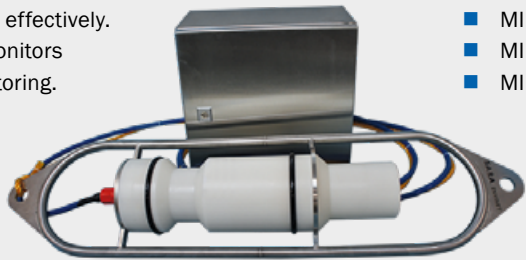
PRODUCTS AND SOLUTIONS

Scienta Envinet's main lines of products comprise the GDR station MIRA with extremely low power consumption, the spectroscopic monitoring stations SARA for air and TUNA for water with sophisticated analysis possibilities and high dose rate spectroscopy, the aerosol monitor SIRA for maximum sensitivity, the SAUNA series for radionuclide detection, and the mobile MONA series for high speed, portable, vehicle-based and airborne measurements. All measurement data is collected and evaluated by NMC, our central monitoring software.



TUNA – SPECTROSCOPIC WATER DETECTION

TUNA is the versatile solution for spectroscopic monitoring of gamma radiation in water, for surface and deep water, for fresh and salt water. TUNA detects very low concentrations of artificial nuclides, thereby allowing contamination to be identified rapidly and effectively. This applies to installed monitors as well as temporary monitoring.



MIRA – DOSE RATE DETECTION

MIRA is a highly versatile and flexible gamma dose rate monitoring system. Its modular design allows for a multitude of configurations, making it a multipurpose measurement device for applications from remediation to NPP monitoring. MIRA uses two Geiger-Müller detectors to cover a wide measurement range from 10 nSv/h to 10 Sv/h, calibrated for Ambient Dose Rate Equivalent H*(10). Numerous accessories extend the application range to cope with any environmental conditions: the cold of perpetual ice, the high humidity of the rain forests, tropical storms, and the heat and cold of hostile deserts.

Three base variants are available, with numerous configuration options:

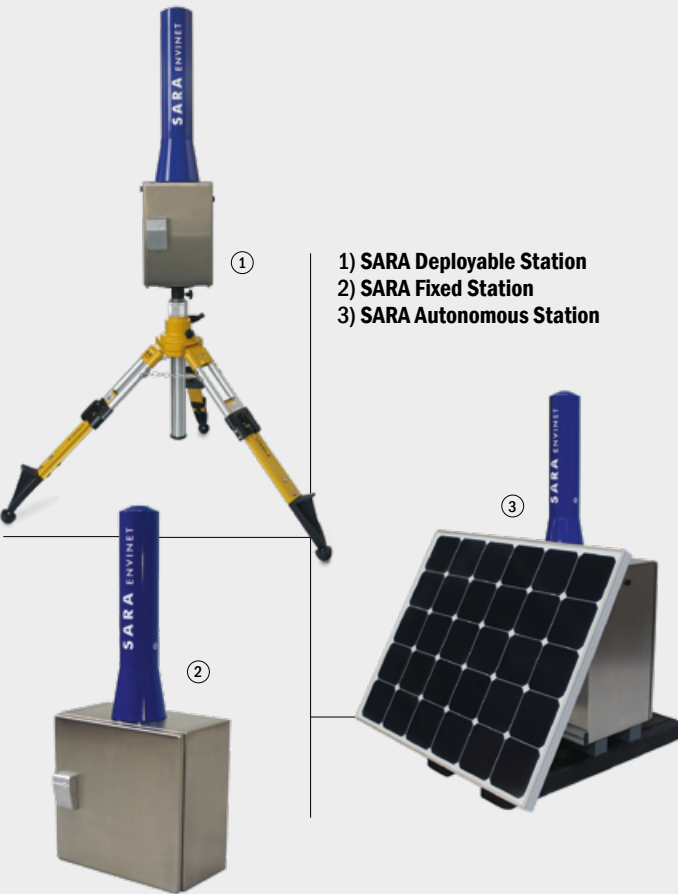
- MIRA Autonomous Station for installation at any location
- MIRA Deployable Station for quick deployment
- MIRA Weather Station, our AI-ready solution for all eventualities

MONA – MOBILE DETECTION

MONA is Scienta Envinet's mobile spectroscopic detection and survey system family for portable, vehicle or airborne use. It detects the smallest amounts of artificial radiation in the environment. The system acquires the gamma spectrum very quickly, identifies the isotopes and calculates the total gamma dose rate as well as the dose rate for each identified nuclide. Each spectrum is geotagged using the integrated GPS and alarms are raised if the radiation level exceeds one of the user-configurable thresholds. Multiple MONA systems can be combined dynamically for greater sensitivity and better source directionality.

Four variants for mobile detection are available:

- MONA-DRONE, the solution for short-range airborne detection with unmanned aerial system (UAS)
- MONA-L, the highly sensitive, general purpose detector
- MONA-EPR, the specialized version for emergency preparedness and response, developed in close cooperation with firefighters
- MONA-BRD, for long missions in crowded or difficult terrain



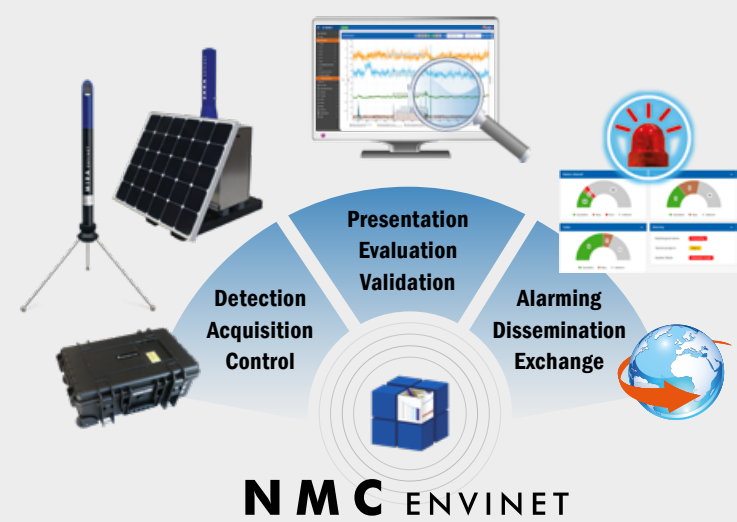
SARA – SPECTROSCOPIC DETECTION

In applications involving radioactive materials, advanced monitoring technologies are integral for achieving precise and reliable measurements to protect population and environment. SARA, the Spectroscopic Radiation Monitoring System from Scienta Envinet, delivers such accurate gamma radiation data. Among others, it serves supervisory authorities, industry, healthcare and energy production. By employing spectroscopic acquisition methods, SARA ensures elevated data accuracy, thereby facilitating operational efficiency and regulatory adherence. Tightly integrated to NMC, the advanced spectrum analysis with deconvolution and AI-nuclide analysis offers superior resolution, sensitivity and identification capability.

Three highly configurable main station types are available:

- SARA Deployable Station for quick deployment
- SARA Fixed Station for pole or wall mounting
- SARA Autonomous Station with solar power, even for low insolation

> PRODUCTS AND SOLUTIONS



Radiation monitoring, communication and software maintenance: ENVINET RADMON brings together all the ingredients of a worry-free network operation as a single package. Ideally combined with NMC Cloud, it lets you focus completely on measurements, with no budget surprises. This unique solution ensures effortless security and reliability.

NMC – MONITORING CENTER SOFTWARE

NMC is Scienta Envinet’s central monitoring software solution. The scalable platform administers and oversees environmental monitoring stations and offers a wide range of options for the validation, presentation, evaluation and analysis of data. NMC connects all Scienta Envinet and numerous third-party products. It is designed to monitor radioactivity for nationwide monitoring networks, ring monitoring systems around nuclear installations and monitoring inside and outside nuclear facilities, as well as mobile monitoring systems. Thanks to its flexible, modular structure, NMC also seamlessly covers related monitoring tasks with regard to meteorology, water and air.

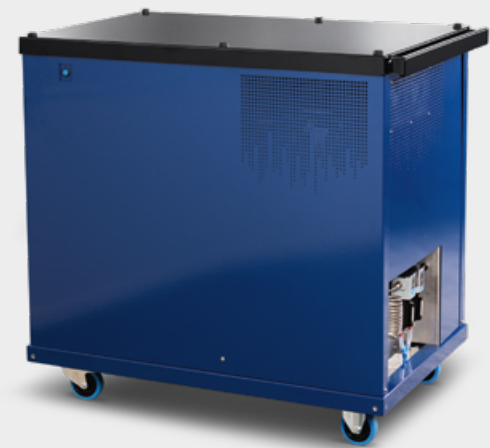


SIRA station and filter magazine. Filters can be removed individually at any time from the magazine for additional evaluation in the laboratory.



SIRA – AEROSOL MONITORING

SIRA is Scienta Envinet’s solution for the automatic and highly sensitive monitoring of airborne radioactivity and the determination of its concentration. SIRA combines the strengths of SARA with that of a renowned aerosol sampler and is designed to provide maximum reliability and a minimum error rate, much better than the standard. Combined with its compactness, the optional field-housing, low power consumption and very low maintenance, SIRA is a truly unique device. SIRA can be integrated seamlessly in existing and new monitoring networks as the perfect complement to dose rate monitoring stations. SIRA is available as pure γ - and as combined β - γ -monitor SIRA-B.



SAUNA QUBE – XENON MONITORING

SAUNA QUBE is the latest generation, fully automated system to measure the activity concentration of radioactive xenon in the atmosphere. In a way, QUBE is the miniaturized, strong sister of SAUNA III: A highly flexible, scalable radionuclide monitoring system. It works well as a single unit, but its real power arises from the many: earliest warning and remote monitoring capabilities can easily be expanded by adding units to the QUBE array. If boundary conditions change, QUBE can swiftly be relocated to adjust the array dynamically. Like the SAUNA III system, QUBE measures the activity of four relevant xenon isotopes using beta-gamma coincidence spectroscopy, thereby allowing to characterize the emission source, e.g., as NPP or nuclear weapon explosion.



SAUNA III – RADIOXENON MONITORING

SAUNA III is the CTBTO-qualified solution that is regularly used to distinguish nuclear weapons tests from normal emissions. It is our most sensitive solution for detection of radioactive Xenon. SAUNA III performs uninterrupted sampling, processing, quantification, and activity measurement of all four xenon isotopes Xe-133, Xe-135, Xe-133m, and Xe-131m. The SAUNA system is available for installation in a building for regular monitoring, as a complete container solution and as a laboratory system. The instrument has a modular design and everything except the detection system is installed in 19” racks.

USE CASES

Scienta Envinet's stations and software solutions are used by more than 120 customers in over 35 countries all over the world. More than 5000 stations are up and running worldwide in an ever-growing number of applications. The most typical ones are nationwide and NPP ring monitoring tasks, remediation documentation and mapping as well as CBRN and the search for orphan sources. The modularity and flexibility of Scienta Envinet's solutions open up a wide range of additional application possibilities.



Designed and manufactured in Germany

CBRN

Preparedness is the key: In case of an incident, portable versions of MIRA and SARA can be deployed in a few minutes and autonomously monitor the radiation at their location. LTE and optional satellite backup ensure that no data is lost. The portable MONA-EPR with local display supports your responders on-site, delivering nuclide-specific information to the monitoring center in real time. MONA-DRONE enhances these efforts from the air, with measurement values directly on the remote. MONA-BRD, as a discreet backpack version, enables inconspicuous mobile detection on foot. And the classic MONA-L's high sensitivity and shortest measurement times complete the tasks by delivering data from the ground and the air on the spot. NMC combines all the data and forwards it to your decision support system. Know what is happening and what is coming for the best decision you can make.

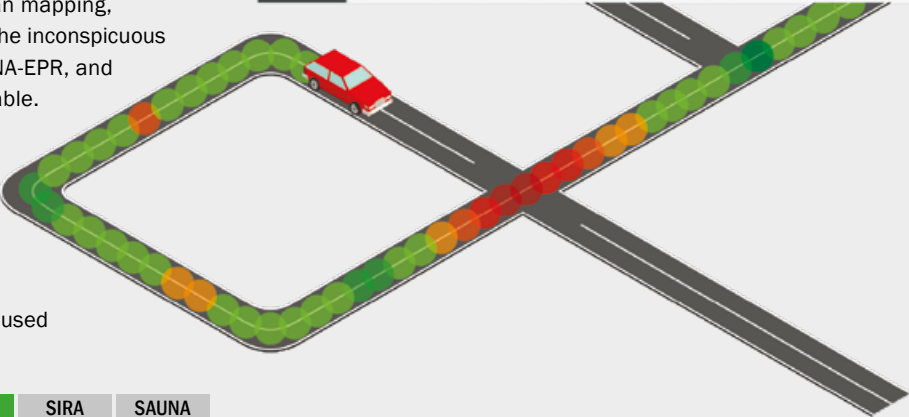
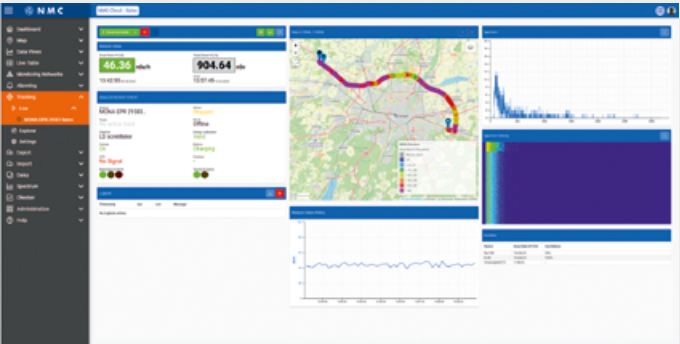
- NMC
- SARA
- TUNA
- MIRA
- MONA
- SIRA
- SAUNA

MAPPING AND SOURCE SEARCH

No matter whether your mapping application needs a portable, car or airborne detector, MONA-L is the ideal choice. With a typical detector size of 4l, scalable up to 16l, and 1-second acquisition intervals, no radiological feature is missed. With the perfect integration in NMC, creating radiological maps is easy, and so is the search for orphan sources. MONA-L is also suited for static monitoring of moving objects, such as luggage or mail. For lean mapping, counterterrorism and surveillance applications, the inconspicuous MONA-BRD backpack version, the versatile MONA-EPR, and MONA-DRONE for airborne operations are available.

The detection and localization of radio-active environmental contamination require highly sensitive monitoring systems with short measurement times in order to be able to quickly monitor large or scan extended areas. Our products may be operated independently or used as integral components of monitoring networks.

- NMC
- SARA
- TUNA
- MIRA
- MONA
- SIRA
- SAUNA



NATIONWIDE MONITORING

For our early warning system for nationwide radiation monitoring, we offer a range of different detectors, data acquisition systems, autonomous monitoring stations, mobile monitoring systems, state-of-the-art resilient data communication technology and high performance, reliable software for the monitoring center.

Hundreds of stations reporting to the monitoring center are no challenge for NMC. Typical networks comprise a large number of MIRA GDR stations, enriched with a share of spectroscopic SARAs for nuclide identification, especially near borders and nuclear installations. More demanding networks rely fully on spectroscopic stations. For a worry-free installation, MIRA and SARA can both be entirely solar powered and communicate via LTE. For maximum sensitivity, the gamma-spectroscopic aerosol monitor SIRA is included in the network, as well as SAUNA QUBE for earliest warning.

- NMC
- SARA
- TUNA
- MIRA
- MONA
- SIRA
- SAUNA



> USE CASES



MINING AND REMEDIATION

Radioactivity in potentially harmful concentrations is not always man-made. NORM and TENORM are also found in oil and gas exploration and mining. This concerns thorium and uranium mines as well as many precious metal and rare earth mines where the former two are typical accompanying elements. Even in inactive mines, their washout can lead to dose rates in the $\mu\text{Sv/h}$ range. MIRA safely monitors the ambient dose rate equivalent, while TUNA oversees effluents in nearby bodies of water. For remediation activities, the radiological before/after comparison ensures that

your success is properly credited. In combination with NMC, the automatic reporting in combination with gapless documentation and public communication of safety measures as well as achievements sustain the public support to carry out your projects.

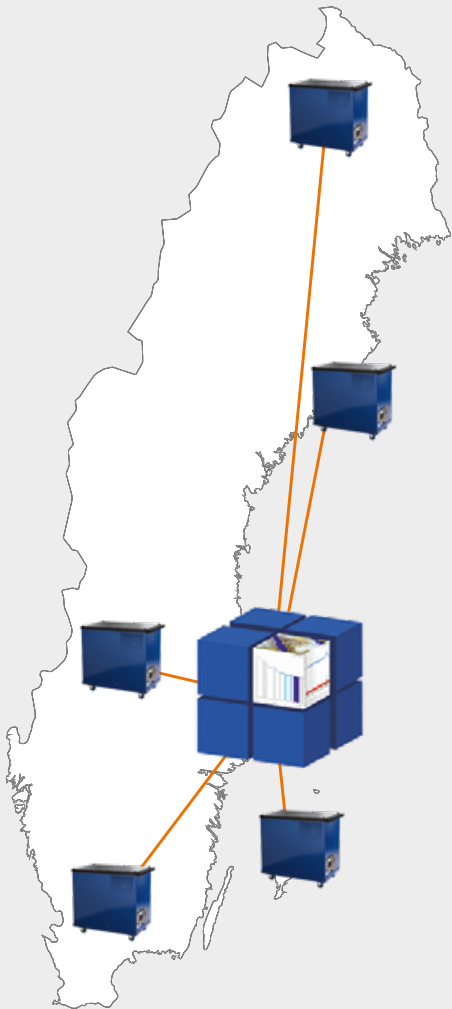
NMC	SARA	TUNA	MIRA	MONA	SIRA	SAUNA
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RING MONITORING OF NUCLEAR FACILITIES

One of the most demanding applications in environmental radiation monitoring is the ring monitoring around nuclear facilities. And there is a unique solution to it: SARA with HD-Spec performs spectroscopy up to dose rates of 100 mSv/h! An additional GMT extends the $H^*(10)$ range up to 10 Sv/h. In two measurement rings, ideally augmented with the leaner MIRA, a perfect solution emerges: Coverage of the full dose rate range, plus the nuclide vector, which contains important information on accident progress and biological impact. Redundant communication and battery buffering are standard. In combination with NMC in the cloud, no active connections into the internal network of the nuclear facility is necessary, while still all information is available at your fingertips. IT security at its best.

NMC	SARA	TUNA	MIRA	MONA	SIRA	SAUNA
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RADIOXENON MONITORING – ARRAY CONCEPT

Radioxenon is the earliest indicator of irregularities in the operation of nuclear facilities. The isotope signature reveals the type of source and its condition. The array concept of SAUNA QUBE improves the remote monitoring of nuclear facilities by geographic coverage and thus the earliest warning capability, compared to a single unit. Combined with atmospheric data and diffusion models, it also drastically improves source localization since individual detections are spread out in both time and space.

NMC	SARA	TUNA	MIRA	MONA	SIRA	SAUNA
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WATER MONITORING

Rivers and other bodies of water are sources of life, but also potential carriers of radio-activity. No matter whether you want to monitor the influx of radionuclides in a river over the country border or the outflow below a nuclear installation or a mine, TUNA reliably identifies the radionuclides. TUNA also warns you in case of contamination around a drinking water reservoir or a desalination plant. NMC and its alarming module ensure that you are notified immediately.

NMC	SARA	TUNA	MIRA	MONA	SAUNA
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SPECIAL APPLICATIONS

SARA, TUNA, MIRA, MONA, SIRA, SAUNA and NMC offer many more features than those presented here.

- Radioactive waste disposed in the sea can be discovered and monitored with TUNA, even in the deep sea.
- Monitoring of decommissioning sites, perhaps with frequently changing surveillance locations, greatly benefits from the optional GPS for MIRA and SARA.
- Americium in molten steel is a hot topic for MONA and SARA.
- Residual activity from medical treatments in sewage plants is monitored with TUNA or directly in the waste water tank of the hospital.
- Soil moisture can be measured indirectly with SARA by monitoring the K-40 activity.

And if your problem is even more challenging, we are happy to work with you to develop a customized solution.



IN USE AROUND THE WORLD

Since 1985, our customers have been relying on Scienta Envinet's solutions for monitoring environmental parameters with more than 5,800 stations.



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