MONA ENVINET

MONA – Mobile Spectroscopic Radiation Detection System

MONA is Scienta Envinet's mobile spectroscopic detection platform for use with vehicles, aircraft, drones, backpacks and more. It detects the smallest amounts of artificial radiation in the environment and identifies the isotopes, calculates the total gamma dose rate as well as the dose rate for each identified nuclide. It issues alarms and uses GPS data to assign the location to the related data records and spectra.

scientaenvinet

MONA-L

Our solution for vehicle and airborne use

MONA-L combines state-of-the-art detector technologies with a modern software environment. The detectors can be operated individually, or combined in software into one virtual device, a "Community". It is easy to use and the integrated sophisticated analysis provides the information needed for decision-making.

MONA-L detector case

Typical configuration of the user interface

Vehicle top box

APPLICATIONS

MONA-L is our most sensitive gamma spectroscopy system, designed for mobile applications, such as:

- Survey and detection of gamma contamination in the environment
- Uncovering and localisation of hidden radioactive material
- Area screening, i.e. vehicle and airborne acquisition of surface contamination profiles
- Support during nuclear emergencies for civil defense, fire brigades and radiation protection
- Routine measurements around nuclear installations
- Oil and gas industry

DEVICE FEATURES

- Real-time detection and directional localisation of very low artificial contamination
- Fast acquisition (up to 1/s) provides high spatial resolution
- In-situ isotope identification
- Measurement of total and nuclide-specific ambient equivalent gamma dose rate H*(10)
- Integrated system health supervision
- WiFi for wireless communication between detectors and control unit
- Integrated battery supply for 24 h autonomous operation
- Integrated GPS receiver
- Freely configurable alarm levels
- Web interface for easy data access and configuration
- LTE for direct data sharing with a central monitoring center NMC
- Expandable with additional MONA-L devices via Communities

OPTIONS

An extended dose rate range is possible with an additional GMT (up to 10 Sv/h) or a high dose rate spectrometer (up to 100 mSv/h). In addition to the optional internal neutron detector, the system offers an interface to an external neutron detector. Furthermore, many accessories are available such as the shock-absorbing vehicle roof-top box, a transportation box, a satellite communication system, etc.

COMMUNITIES

The MONA-L system is expandable with supplementary detector units to increase the sensitivity or to indicate the direction of the source relative to the instrument. The additional detection units are combined in software as so-called "Communities". They can be combined at will, i.e. all detectors can be used separately, or together.

The MONA-L system is a combination of one or more highly sensitive detector units and a laptop as control unit.
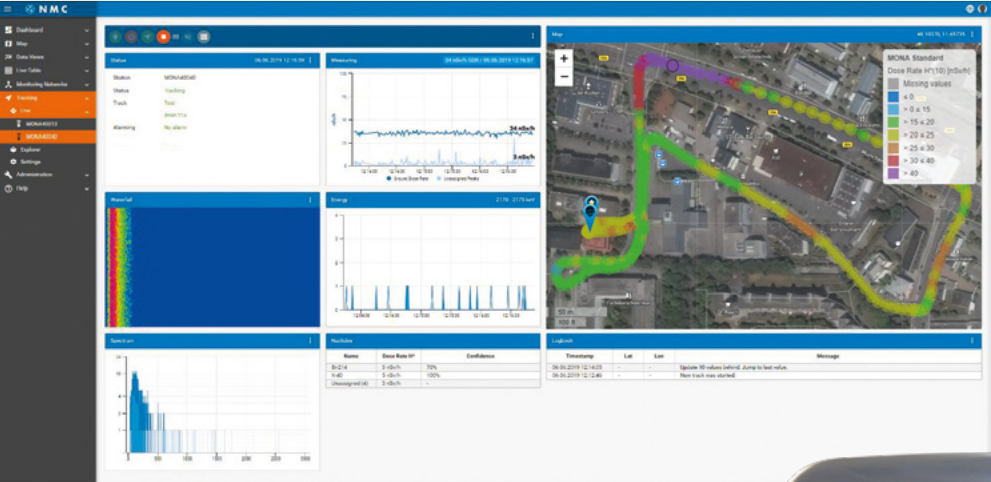
USER INTERFACE

Like all Scienta Envinet products, MONA-L uses the NMC as data management system with its integrated web interface for easy configuration, operations and data management.

NMC INTEGRATION

- Online visualisation on maps (tracking)
- Visualisation of data on tables, charts and waterfall diagram with 2D sectional views
- Visible and audible alarms
- Map server with preinstalled OpenStreet maps
- Comprehensive track management and visualisation
- Data export to 3rd-party GIS applications

BENEFITS

- Robust and easy to use
- No wiring needed between mobile PC and detector
- Highly automated operation
- Minimal service expenses
- Autonomous operation
- Maintenance-free operation
- Flexible detector configuration, on-demand communities

MODERN GIS APPLICATION

The user interface uses a modern GIS approach for visualisation of the measurement track. In one view, all information is prepared as time series, waterfall diagrams and map overlays. Live data as well as historical data can be easily viewed and inspected.
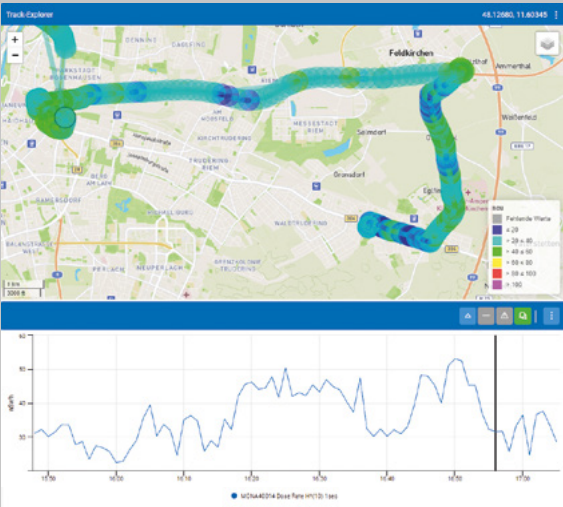
Online tracking

MONA-EPR

The emergency preparedness and response solution

MONA-EPR – our emergency preparedness specialist – is a versatile car-borne and carry-on device which was developed together with first responders. It works fully autonomously with dose exposure calculation.

MONA-EPR detector case

13.12.2023 10:13:00 UTC   5 s
33.3 nSv/h
142 pSv [15 s]   EXERCISE

Clear, daylight readable display

Transparent lid inset
Easily accessible connectors on the back
Service interface
Status indicators
Battery Supply ON/OFF
Protected controls
On/Off
Change track mode
Acknowledge alarm

Highly equipped for safe operation

APPLICATIONS

MONA-EPR is our highly mobile gamma spectroscopic system designed with a focus on emergency preparedness and response, such as:

- Support during nuclear emergencies for civil defense, fire brigades and radiation protection
- Survey and detection of gamma contamination in the environment
- Uncovering and localisation of hidden radioactive material
- Vehicle-based acquisition or pedestrian use
- Temporary stationary measurement device

DEVICE FEATURES

- Integrated display, controls and alarm LEDs
- 5 s measurement interval (2 s possible)
- In situ isotope identification
- Measurement of total and nuclide specific ambient equivalent gamma dose rate $H^*(10)$
- Visible and audible alarms
- Integrated health supervision
- WiFi for wireless communication to local laptop with web interface for easy data access and configuration
- Permanent connection to monitoring center NMC via LTE
- Integrated battery supply for autonomous operation
- Integrated GPS receiver
- Easy switching between use-cases
- Designed for easy handling with gloves in all weather conditions

OPTIONS

The MONA-EPR system is available with different types of scintillators.

- Material NaI(Tl), $LaBr_3$(Ce), $CeBr_3$
- Sizes 1.5"x1.5" to 3.0"x3.0"
- Other types and sizes on request

Using an additional high dose rate scintillator, the spectroscopic measurement range can extended ut to 100 mSv/h.
An additional GMT allows recording dose rates up to 10 Sv/h.

MONA-EPR in use

NMC INTEGRATON

Like all Scienta Envinet products, MONA-EPR uses NMC for visualisation. A specialised interface is available for first responders, with integrated dose assessment.

- 4 different tracking modes (offline, real, test, exercise)
- Online visualisation on maps (tracking)
- Data exports in different formats (ANSI N42.42, CSV)

BENEFITS

- Easy to use, even with gloves
- Robust design, for all weather conditions
- No wiring needed between mobile PC and detector
- Flexible detector configuration

4G LTE

Communication NMC and MONA-EPR

MONA-EPR ACCESSORIES

Modern Tablet PC with WIFI connection to MONA-EPR

Wearable on the back for terrain that is difficult to access or in tight spaces.

MONA-DRONE

Solution for airborne mapping

MONA-DRONE is the remote controlled airborne solution for localisation of sources and mapping of contaminated areas.

MONA-DRONE in action

APPLICATIONS

MONA-DRONE is the light-weight family member designed for remote controlled airborne measurements, such as:

- Survey and detection of gamma contamination in the environment for smaller areas (up to a few kilometres)
- Uncovering and localisation of hidden radioactive material
- Support during nuclear emergencies for civil defense, fire brigades and radiation protection
- Clearance surveys

DEVICE FEATURES

- Fully integrated with the drone – but also operable without
- NaI, CsI or CeBr$_3$ – with shock-resistant SiPM technology
- LIDAR height measurement
- Real-time detection of low artificial contamination
- Configurable measurement interval (default: 1 s)
- In situ isotope identification
- Integrated state of health surveillance
- Wireless communication between detector and control unit via drone remote
- Integrated GNSS
- Selectable alarm levels
- Extended dose rate range with high dose rate spectroscopy or GMT
- LTE adapter for live data sharing with monitoring center NMC
- Easy and quick setup

COMMUNICATION

Identified nuclides and GDR are displayed directly on the remote. Wireless communication between NMC and MONA-DRONE via the remote (works also in locations without LTE coverage), alternatively directly via WiFi or LTE.
The MONA-DRONE system is available with an optional internal neutron detector.

DRONE

The industrial drone DJI Matrice 350 RTK is available separately and has outstanding flight parameters (incl. detector):

- Approx. 40 minutes, top speed 23 m/s
- Distance up to approx. 8 km, flight height max 5,000 m
- FPV camera (1080p, 30 fps, 142°)
- LIDAR
- IP55, -20 °C – 50 °C, wind up to 12 m/s
Other drone models on request.

Drone remote control equipped with a bright 7-inch screen

NMC INTEGRATION

- Both, the local operator and the remote monitoring center use the NMC software, so that all data is available in the same place.
- Height correction of derived values
- Online visualisation on maps (tracking)
- Visualisation of data on tables, charts and waterfall diagram with 2D sectional views

BENEFITS

- Integrated with drone
- Communication via remote for full range
- Highly automated operation
- Easy to use
- All data in one place: direct data sharing with monitoring center

MONA-DRONE AS MONA-BACKPACK

For missions in crowded or difficult terrain, the detector unit of MONA-DRONE can also be installed in a backpack and becomes MONA-Backpack. It keeps the same detector characteristics as the MONA-DRONE.

A comfortable backpack for long missions is available with a tablet holder and an optional solar charger.

IN USE AROUND THE WORLD

Since 1985, our customers have been relying on
Scienta Envinet's solutions for monitoring environmental
parameters with more than 5,000 stations.

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