Welcome

It is our great pleasure to introduce the activity and product line of our company.

Gamma Technical Corporation was founded in 1920 and has been developing and manufacturing radiation measuring instruments for more than 50 years.

Our company has always been involved in R&D of innovative technological solutions. Gamma Technical Corporation has been a developer and manufacturer of radiation measurement devices since the 1950's. Today we offer several unique solutions in the field of radiation detection, measurement and identification such as our portable radiological food tester, on-board radiation reconnaissance system and radiation portal monitors that can be customized for specific applications.

Gamma also entered the field of meteorological and environmental monitoring decades ago, today offering complex monitoring stations and networks for both outdoor and indoor applications, customized for a building, area, region, or even establishing a countrywide network for CBRN safety, agricultural and/or meteorological surveillance purposes.

Our main products:
- GM tube based radiation measuring instruments
- scintillation crystals and detectors
- radiation portal monitors
- radioactive particle monitoring systems
- local and countrywide monitoring and early warning systems,
- radiation reconnaissance devices
- meteorological instruments

Should you need further information please do not hesitate to contact us.

Yours sincerely,

Attila Zsitnyányi

CEO
Gamma Technical Corporation
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History

Gamma Technical Corporation entered the nuclear industry in 1955. We have been developing and manufacturing scintillators, radiation detectors and equipment for diverse nuclear applications throughout the past decades.

Present

We develop and manufacture GM type and scintillation type detectors. With different types of detectors and sensors we build complete systems for customers on the field of safety, security, environment and radiation protection. We have our own scintillation crystal growing facility and the capability to design and make special, customized devices ideal for research institutes and nuclear facilities.

Nuclear measurement techniques
Scintillator development and production

Scintillators for nuclear measuring applications in metal canisters

- wide range of scintillator materials
- scintillators in grooved or flanged canister
- rectangular and cylindrical canister
- scintillators with diameter from 0.25" to 5" and thickness up to 12"
- well-type and transversely bored crystals
- compound scintillators for simultaneous $\alpha$, $\beta$, $n$ counting and $\gamma$ spectrometry
- unique scintillators according to special customer requirements

Versions:
S....../H: heat-resistant
S....../R: with built-in reference source
S....../L: built-in LED for stabilization
S....../Q: rectangular base
S....../C: lead collimated
Other sizes, housing and scintillator materials are available on customer request.
<table>
<thead>
<tr>
<th>Standard types</th>
<th>Measurement application</th>
<th>Material</th>
<th>Housing</th>
<th>Window</th>
<th>Standard size (D: diameter) (L: length)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S111...</td>
<td>soft and medium gamma</td>
<td>NaI(Tl)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 8 - 127 L: 10.5 - 300</td>
</tr>
<tr>
<td>S112...</td>
<td>low activity gamma</td>
<td>NaI(Tl)</td>
<td>well-type Al-Mg-Si or steel, grooved or flanged housing</td>
<td>0.2 or 0.5 mm thick</td>
<td>D: 40 - 127 L: 50 - 127</td>
</tr>
<tr>
<td>S113...</td>
<td>low-energy, X-Ray, Mössbauer</td>
<td>NaI(Tl)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al or Be 0.05 or 0.2 mm thick</td>
<td>D: 5 - 50 L: 0.1 - 4</td>
</tr>
<tr>
<td>S114...</td>
<td>soft gamma</td>
<td>NaI(Tl)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 14 - 127 L: 2.5 - 6.3</td>
</tr>
<tr>
<td>S121...</td>
<td>gamma</td>
<td>CsI(Tl)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 8 - 127 L: 10.5 - 300</td>
</tr>
<tr>
<td>S191...</td>
<td>gamma</td>
<td>CsI(Na)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 8 - 127 L: 10.5 - 300</td>
</tr>
<tr>
<td>S10...1</td>
<td>gamma</td>
<td>BGO</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al or Be 0.05 or 0.2 mm thick</td>
<td>D: 8 - 127 L: 10.5 - 300</td>
</tr>
<tr>
<td>S10...2</td>
<td>gamma</td>
<td>LaBr₃(Ce)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al or Be 0.05 or 0.2 mm thick</td>
<td>D: 8 - 127 L: 10.5 - 300</td>
</tr>
<tr>
<td>S522...</td>
<td>Proton, electron, beta, gamma</td>
<td>PVT plastic</td>
<td>Al-Mg-Si grooved or flanged housing or fixed to light guide</td>
<td>Al-metallized film</td>
<td>D: 8.5 - 127 L: 0.1 - 5</td>
</tr>
<tr>
<td>S523...</td>
<td>gamma</td>
<td>PVT plastic</td>
<td>Al-Mg-Si grooved or flanged housing or fixed to light guide</td>
<td>Al</td>
<td>D: 8 - 127 L: 10.5 - 2000*</td>
</tr>
<tr>
<td>S212...</td>
<td>alpha</td>
<td>ZnS(Ag)</td>
<td>Al-Mg-Si grooved or flanged housing</td>
<td>Al-metallized film</td>
<td>D: 40 - 63</td>
</tr>
<tr>
<td>S222...</td>
<td>alpha + beta</td>
<td>PVT Plastic + ZnS(Ag)</td>
<td>Al-Mg-Si grooved or flanged housing</td>
<td>Al-metallized film</td>
<td>D: 40 - 63 L: 0.2 - 5</td>
</tr>
<tr>
<td>S32...</td>
<td>slow neutron</td>
<td>Boron polyester + ZnS(Ag)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 25 - 63 L: 1.2</td>
</tr>
<tr>
<td>S332...</td>
<td>fast neutron</td>
<td>Plastic + ZnS(Ag)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 25 - 63</td>
</tr>
<tr>
<td>1.9...</td>
<td>beta + gamma</td>
<td>gamma scintillator + PVT plastic</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al-metallized film</td>
<td>D: 25 - 63 L: according to request</td>
</tr>
<tr>
<td>1.9... Zn</td>
<td>alpha + beta + gamma</td>
<td>gamma scintillator + PVT plastic + ZnS(Ag)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al-metallized film</td>
<td>D: 25 - 63 L: according to request</td>
</tr>
<tr>
<td>1.9...32</td>
<td>gamma + slow neutron</td>
<td>gamma scintillator + Boron polyester + ZnS(Ag)</td>
<td>Al-Mg-Si or steel, grooved or flanged housing</td>
<td>Al</td>
<td>D: 25 - 63 L: according to request</td>
</tr>
<tr>
<td>Sxxxxxx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*according to Your request</td>
</tr>
</tbody>
</table>
NDI Intelligent scintillation detectors

Scintillation detectors for measuring and analysing ionizing radiation

- simultaneous alpha, beta, gamma and neutron radiation measurement
- measurement evaluation of multiple types of radiation via phoswich scintillator
- customized embedded software on request
- no consumables
- high sensitivity
- high stability
- long endurance
- built-in high-voltage power supply
- LED spectrum stabilization
- no regular maintenance required

Wide range of configurations

**Scintillator sizes [mm]**

- a. 6 (0.25’’) ... 127 (5’’)
- b. 0.1 (0.04’’) ... 300 (12’’)

**Special electronics**

- spectrum stabilization
- coincidence
- low background

**Communication interfaces**

- RS-232, RS-485,
- USB, Bluetooth, etc.

**Scintillator materials**

NaI(Tl), CsI(Tl), CsI(Na), BGO, ZnS(Ag), etc.
### NDI accessories:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>vertical detector support stand with sample and shielding plate holder</td>
</tr>
<tr>
<td>2</td>
<td>shielding plate kit for demonstration</td>
</tr>
<tr>
<td>2</td>
<td>advanced desktop detector holder, handheld NDI carrier for any type of NDI detectors</td>
</tr>
<tr>
<td>2</td>
<td>standard desktop detector holder, handheld carrier for standard (NDI-65) detectors</td>
</tr>
<tr>
<td>2</td>
<td>touch screen computer with mounting kit</td>
</tr>
<tr>
<td>2</td>
<td>rugged case for NDI</td>
</tr>
<tr>
<td>3</td>
<td>MultiAct spectrometric software</td>
</tr>
<tr>
<td>4</td>
<td>airtight lead shielding with filter holder for air monitoring</td>
</tr>
<tr>
<td>5</td>
<td>NZ-138 lead shielded measuring place on wheels, opening lid</td>
</tr>
<tr>
<td>6</td>
<td>NZ-305 lead tower composed of lead segments, with NDI mount and sample holder</td>
</tr>
<tr>
<td></td>
<td>radioisotope sources ($^{137}$Cs, $^{60}$Co, $^{90}$Sr, $^{210}$Po, ...) under exemption level (EU)</td>
</tr>
</tbody>
</table>

### Nuclear measurement techniques

- **MultiAct software (3)**
- **lead shielding for air monitoring (4)**
- **stand with sample and shielding plate holder (1)**
- **handheld carrier (2)**
- **NZ-138 (5)**
- **NZ-305 (6)**
Sample analytical applications

Complete instrumentation for nuclear measurement, research and education

- qualitative and quantitative analysis
- isotope identification and determination of activity with estimated deviation
- full-fledged nuclear spectrometry system
- user editable library with more than 100 isotopes already included
- simultaneous spectrum recording and evaluation
- adjustable measurement time / number of measurement cycles
- quick evaluation with calibration files and background spectra
- automatic calculation of net alpha, beta, gamma activity and relative uncertainty
- peak marking and net peak area highlighting
- peak search and identification of overlapping peaks
- calculation of overlapping, single peak areas and deviation

Wide range of configurations

Measuring systems including intelligent nuclear detector(s), lead shielding, display and analytical software are available in wide range.

Requests for tailor-made measurement assemblies according to special requirements are very welcome.
### Configurations

<table>
<thead>
<tr>
<th>Measurement Applications</th>
<th>Configuration</th>
<th>Installation</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 4π gamma</td>
<td>2x NDI 127 detectors, spectrometric sw., with or without lead shield</td>
<td>fixed</td>
<td>100-300 kg</td>
</tr>
<tr>
<td>2 gamma</td>
<td>1x NDI 65 detector, spectrometric sw., NZ-305 lead tower</td>
<td>fixed</td>
<td>200 kg</td>
</tr>
<tr>
<td>sum beta counter</td>
<td>2x NDI 65 beta detectors, spectrometric sw., NZ-305 lead tower</td>
<td>fixed</td>
<td>200 kg</td>
</tr>
<tr>
<td>3 gamma</td>
<td>1x NDI 65 detector, spectrometric sw., NZ-138 hollow-type measuring place</td>
<td>portable, on wheels</td>
<td>200 kg</td>
</tr>
<tr>
<td>4 beta, gamma</td>
<td>1x NDI 65 beta + gamma detector with lead shielding, spectrometric sw.</td>
<td>portable</td>
<td>25 kg</td>
</tr>
<tr>
<td>5 gamma, neutron</td>
<td>1x NDI neutron+gamma detector no shielding, changeble PMT+crystal, built-in PC+spectrometric sw.</td>
<td>handheld</td>
<td>6 kg</td>
</tr>
</tbody>
</table>

### Advantages of scintillation type instruments compared to semiconductor systems

- lower cost
- higher sensitivity
- no additional power supply or process unit needed, only a PC or a laptop
- easier to transport or relocate the complete station (smaller weight, and size)
- easier to use also with little experience or a low level of education
- quicker start up (ready to use in 10s)
- no consumables, no moving parts, no cooling system needed
- working with higher activity samples

### Nuclear measurement techniques
Main components of radiation protection systems:

- portal monitors
- area surveillance equipment
- emission control systems
- environment monitoring stations
- reconnaissance systems

GammaServer central data collector software

All measuring instruments are connected to one network with a central data acquisition and visualization unit. Alarms can be sent by e-mail and/or SMS text message. Actual values can be checked via a smartphone application or remote computer. Dosimetry, telemetric, GIS modules can be integrated. Reporting and action plans are supported by the software.

Network example
Main components of radiation protection systems:

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Installation examples

- BNS-94PA: portal monitor
- BNS-94FM: reconnaissance
- KML-ADR: mobile laboratory

GammaServer data collection
BNS-98: area surveillance

Working area
- sample analyser
- BNS-97: area surveillance
- BNS-94PH: portal monitor

Dressing room
- BNS-94PM: portal monitor
- BNS-94PS: portal monitor

OnREM: emission control
TVS-3: environment monitoring

Nuclear measurement techniques
BNS-94 Radiation Portal Monitors

Checking vehicles or persons for radioactive materials or contamination at the entrance or exit of a protected area

- high-sensitivity
- short reaction time (0.5 sec)
- isotope specific alarms
- gamma and neutron detection with a single detector
- background, shielding and speed compensation

Places of application:
Border stations, customs checkpoints, security systems, nuclear facilities, metal processors, harbours.

Wide range of accessories:
Gate control, camera system, license plate identification, remote surveillance, text messages, email alert, data and event logging.
Wired or wireless connection between system components (optical, ethernet, RS-485, SW radio, GPRS, ...).

Installation example
<table>
<thead>
<tr>
<th>Standard types</th>
<th>Measurement applications</th>
<th>Scope of inspection</th>
<th>Installation</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNS-94</td>
<td>gamma, neutron</td>
<td>trucks, trains, cars</td>
<td>fixed</td>
<td>1 horizontal detector in one pillar</td>
</tr>
<tr>
<td>BNS-94H</td>
<td>gamma</td>
<td>trucks, trains</td>
<td>fixed</td>
<td>1 vertical detector in one pillar</td>
</tr>
<tr>
<td>BNS-94PA</td>
<td>gamma, neutron</td>
<td>trucks, trains</td>
<td>fixed</td>
<td>2 detectors in one pillar</td>
</tr>
<tr>
<td>BNS-94PS</td>
<td>gamma</td>
<td>persons, baggage</td>
<td>fixed</td>
<td>lightweight</td>
</tr>
<tr>
<td>BNS-94P/L</td>
<td>gamma, neutron</td>
<td>persons, baggage</td>
<td>fixed</td>
<td>above doors or conveyors</td>
</tr>
<tr>
<td>BNS-94PM</td>
<td>beta, gamma</td>
<td>persons, baggage</td>
<td>mobile</td>
<td>wheeled, parallel checking of floor and wall contamination</td>
</tr>
<tr>
<td>BNS-94PH</td>
<td>beta, gamma</td>
<td>persons</td>
<td>fixed</td>
<td>built-in hand and foot contamination control</td>
</tr>
<tr>
<td>BNS-94FM</td>
<td>gamma, neutron</td>
<td>trucks, trains, cars</td>
<td>fixed</td>
<td>prepared for mounting onto vehicles, mobile, with stand</td>
</tr>
<tr>
<td>BNS-94M</td>
<td>gamma</td>
<td>trucks, trains, cars</td>
<td>fixed</td>
<td>mobile detectors with tripod, built-in alarm unit and battery pack</td>
</tr>
<tr>
<td>BNS-94MH</td>
<td>gamma</td>
<td>trucks, trains, cars</td>
<td>mobile</td>
<td>detectors can be operated either on fixed stands and / or tripods</td>
</tr>
<tr>
<td>BNS-94B</td>
<td>gamma, neutron</td>
<td>persons, baggage</td>
<td>mobile</td>
<td>handheld, baggage size, ad hoc hidden checkpoint</td>
</tr>
<tr>
<td>BNS-94V</td>
<td>gamma</td>
<td>trucks, trains, cars</td>
<td>fixed</td>
<td>1 high sensitiv horizontal detector in one pillar</td>
</tr>
</tbody>
</table>

**Nuclear measurement techniques**

![Image of various nuclear measurement devices]
Area surveillance equipment

Registering any changes compared to the normal background radiation, or tracking working processes with radioactive materials

- gamma dose-rate measuring instrument with GM tube
- area monitoring in system or stand-alone mode
- using already existing power and communication network infrastructure
- built-in and/or remote and/or centralised alarm units
- central data logger with event logging and status visualisation
- reporting and action plan support capability
- high sensitivity
- wide measuring range

Places of application:

- nuclear plants
- isotope laboratories
- environmental applications
- waste yards

The system alerts if the radiation level exceeds any of the pre-set thresholds. Several detector, alarm and supplementary units can be connected to the network.
### Configurations

<table>
<thead>
<tr>
<th>type</th>
<th>measurement applications</th>
<th>measure value</th>
<th>installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNS-97</td>
<td>gamma dose rate</td>
<td>Gy/h</td>
<td>fixed, built-in display, UPS, alarm unit</td>
</tr>
<tr>
<td>BNS-97S</td>
<td>gamma dose rate</td>
<td>Sv/h</td>
<td>fixed, built-in display, UPS, alarm unit</td>
</tr>
<tr>
<td>BNS-98</td>
<td>gamma dose rate</td>
<td>Gy/h</td>
<td>fixed</td>
</tr>
<tr>
<td>BNS-98S</td>
<td>gamma dose rate</td>
<td>Sv/h</td>
<td>fixed</td>
</tr>
<tr>
<td>IH-99D</td>
<td>gamma dose rate</td>
<td>Gy/h</td>
<td>fixed, separate sensor and electronics</td>
</tr>
<tr>
<td>IH-99DM</td>
<td>gamma dose rate</td>
<td>Gy/h</td>
<td>fixed, for high dose rates separate sensor and electronics</td>
</tr>
<tr>
<td>BNS-298</td>
<td>surface beta contamination in high gamma background</td>
<td>Bq/cm²</td>
<td>manipulator</td>
</tr>
<tr>
<td>NDI</td>
<td>gamma</td>
<td>cps + spectrum</td>
<td>fixed, isotope selective measurement</td>
</tr>
<tr>
<td>NDI + BNS-98S</td>
<td>gamma + neutron</td>
<td>Sv/h + cps</td>
<td>fixed or mobile</td>
</tr>
</tbody>
</table>

**Nuclear measurement techniques**

- **BNS-97**
- **BNS-97S**
- **BNS-98**
- **BNS-98S**
- **IH-99DM**
- **NDI + BNS-98S**
- **BNS-298**

**Registering any changes compared to the normal background radiation, or tracking working processes with radioactive materials**

- **gamma dose-rate measuring instrument with GM tube**
- **area monitoring in system or stand-alone mode**
- **using already existing power and communication network infrastructure**
- **built-in and/or remote and/or centralised alarm units**
- **central data logger with event logging and status visualisation**
- **reporting and action plan support capability**
- **high sensitivity**
- **wide measuring range**

**Places of application:**

- Nuclear plant
- Isotope laboratories
- Environmental applications
- Waste yard

The system alerts if the radiation level exceeds any of the pre-set thresholds. Several detector, alarm and supplementary units can be connected to the network.
The basic system is highly customizable to meet the requirements of various industrial, security and environment monitoring applications. It measures the activity of the emitted radioactive materials. It is capable of continuously displaying measurement information and also capable of triggering alarms and sending emergency stop signals to the connected systems if the activity is above the pre-set threshold level or the measured activity-increase is significant. The system generates error messages if the filters are torn, damaged or the filter contains a pre-set amount of activity. The system doesn't contain moving parts (no automatic filter-exchanger) to maximise reliability. Hence the software algorithm the system has an optimised filter lifetime. With the use of sandwich detectors it is possible to evaluate the quality and quantity of the radiation, determining the type of radiation (alpha/beta/gamma), and it is also capable of gamma spectroscopy. The system measures the air-flow and temperature parameters, monitors the input power and reports any unauthorised entry into the system.
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- User-defined alarm and emergency levels
- Measurement of alpha, beta and gamma radiation
- Continuous, uninterrupted measurements
- Three types of filters (can be expanded if needed)
- Isotope identification
- Measurement of noble gases
- Online data about actual, daily, weekly, annual emission

Measuring alpha, beta and gamma radiation emitting materials in gaseous or liquid substances

OnREM nuclear emission control systems

Configurations:
- activated carbon and fibre filter detector
- aerosol filter detector
- display
- RS-485 / ethernet converter
- switch
- redundant servers
- redundant UPS
- combined filter detector
- fibere filter detector
- pre-heater
- activated carbon filter detector
- noble gas detector
- aerosol detector
- flow meter
- redundant pumps

Places of application:
- nuclear facilities
- radiological laboratories
- technologies of isotope production
- emitting plants

Nuclear measurement techniques
TVS-3 Environment monitoring stations

Measuring the effect of contamination released into the environment and calculating the spread of airborne particles

Measured parameters:
- gamma dose rate
- alpha, beta airborne particle concentration
- concentration of industrial gases
- meteorological parameters

Features:
- alarm with early warning functions
- mobile version for first response vehicles
- network capable
- continuous operation
- graphic data display
- easily deployable
- high sensitivity

The TVS-3 monitoring station measures the different parameters of the environment and sends the measurement data to the central data acquisition unit. TVS-3 is an automatic device that is capable of continuous and independent monitoring of an area helping the prompt evaluation of a current situation and the determination of the spread of environmental pollutants.

Fields of application:
- reconnaissance of nuclear contamination
- biological and chemical agents
- securing event and disaster sites
The TVS-3 monitoring station measures the different parameters of the environment and sends the measurement data to the central data acquisition unit. TVS-3 is an automatic device that is capable of continuous and independent monitoring of an area helping the prompt evaluation of a current situation and the determination of the spread of environmental pollutants.

**Fields of application:**
- reconnaissance of nuclear contamination
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- securing event and disaster sites

**Measured parameters:**
- gamma dose rate
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- concentration of industrial gases
- meteorological parameters

**Features:**
- alarm with early warning functions
- mobile version for first response vehicles
- network capable
- continuous operation
- graphic data display
- easily deployable
- high sensitivity

Measuring the effect of contamination released into the environment and calculating the spread of airborne particles.

### Configurations

<table>
<thead>
<tr>
<th>Type</th>
<th>Measured Parameters</th>
<th>Data Collection</th>
<th>Installation</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVS-3</td>
<td>temperature, humidity, wind, gamma dose rate</td>
<td>yes</td>
<td>fixed, 3 m or 10 m stand</td>
<td></td>
</tr>
<tr>
<td>TVS-3 RB</td>
<td>temperature, humidity, wind, TIC gases</td>
<td>yes</td>
<td>fixed</td>
<td>ATEX certified</td>
</tr>
<tr>
<td>TVS-3 M</td>
<td>temperature, humidity, wind, gamma dose rate, TIC gases</td>
<td>yes</td>
<td>mobile</td>
<td></td>
</tr>
<tr>
<td>TVS-3 ML</td>
<td>temperature, humidity, wind, gamma dose rate, TIC gases</td>
<td>no</td>
<td>mobile</td>
<td></td>
</tr>
<tr>
<td>TVS-3 MLU, AM6</td>
<td>temperature, humidity, wind, gamma dose rate, TIC gases</td>
<td>yes</td>
<td>mobile</td>
<td>no moving parts</td>
</tr>
</tbody>
</table>

### Diagram
- Ultrasonic wind sensor
- Temperature, humidity, pressure sensors
- DAQ, radio, GSM, GPS, UPS
- Gamma dose rate transmitter
- TIC gas detectors
- Temperature sensor at 0.5 meter

### Photos
- TVS-3
- TVS-3 RB
- TVS-3 MLU, AM6
- TVS-3 ML
- TVS-3 M
The capabilities of Mobile Laboratory Vehicles can be defined specifically according to customer requirements. Mobile laboratories are fully prepared to start any on-site examination of the samples gathered by the crew of the lab vehicle. State-of-the-art instrumentation supports the crew in analysing and evaluating the samples such as portable GC/MS and IH-111L radiological contamination measuring instrument that enables the identification of radioactive contamination in food, soil or other liquid or bulk samples. Built-in meteorological station, radiation reconnaissance system, wide range of hand-held detectors, personal or collective protective equipment, mobile portal monitors can also be part of the vehicle.

Equipment list example:
- handheld radiation level and contamination measuring instrument
- radioactive measuring instrument for food and other bulk or liquid samples
- deployable/vehicle-mountable environment monitoring station (meteo sensors, radiation and gas detectors)
- personal protective equipment
- 4-channel gas detectors
- Ex-Ox measuring instrument
- chemical detection kit
- portable GC/MS
- HPGe detector
- portable radiation portal monitor
- personal dosimeters
- handheld Raman spectrometer
- handheld FTIR spectrometer
- bio agent detection kit
- sampling kit
- first responder decontamination kit
- marking kit
- area lighting set
- power generator
- thermal camera
- communication equipment
The capabilities of Mobile Laboratory Vehicle can be defined specifically according to customer requirements. Mobile laboratories are fully prepared to start any on-site examination of the samples gathered by the crew of the lab vehicle.

State-of-the-art instrumentation supports the crew in analysing and evaluating the samples such as portable GC/MS and IH-111L radiological contamination measuring instrument that enables the identification of radioactive contamination in food, soil or other liquid or bulk samples. Built-in meteorological station, radiation reconnaissance system, wide range of hand-held detectors, personal or collective protective equipment, mobile portal monitors can also be part of the vehicle.

gas chromatograph and mass spectrometer

radiation reconnaissance system

handheld instruments

on-board camera system

on-board PC

Nuclear measurement techniques
On-board reconnaissance systems

Fast detection of radioactive sources and contamination with reconnaissance systems integrated into various vehicles

- GM-tube and scintillation detectors
- GPS based geo coordinates
- map-display
- NBC reports

Fields of application:
- reconnaissance of widely contaminated areas
- performing surveillance from a safe distance
- localization of discrete radiation sources

The goal of an on-board reconnaissance system is to detect any dangerous threat as soon as possible and monitor the actual level of threat to find the borders of a hot zone or safe passage through a contaminated area.

The survey data is stored and displayed with GPS coordinates. User can follow the measurements on LCD screen and can make different NBC reports.

Reconnaissance systems can be integrated into civilian or military road vehicles, UAVs, UGVs, air or water crafts.
## Systems

<table>
<thead>
<tr>
<th>types</th>
<th>carrier</th>
<th>capabilities</th>
<th>specialities</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNS-94FM</td>
<td>vehicle, ship</td>
<td>gamma, neutron rad. detection and identification</td>
<td>integrated camera</td>
</tr>
<tr>
<td>LABV</td>
<td>helicopter, UAV</td>
<td>gamma rad. measurement and identification</td>
<td>high sensitivity, GM tube + NDI detector, integrated altitude meter</td>
</tr>
<tr>
<td>RABV</td>
<td>UAV</td>
<td>gamma rad. measurement</td>
<td>GM tube detector, integrated altitude meter</td>
</tr>
<tr>
<td>FABV</td>
<td>armoured vehicle</td>
<td>gas detection, meteo and gamma rad. measurement</td>
<td>NATO standard reports, military grade</td>
</tr>
<tr>
<td>RDO3221 CBRN</td>
<td>armoured vehicle</td>
<td>chem. and gamma rad. detection and identification, bio detection, meteo measurement</td>
<td>CBRN reconnaissance system with customized armoured vehicle</td>
</tr>
<tr>
<td>KML</td>
<td>laboratory vehicle</td>
<td>chem. and gamma rad. detection, identification and analyzation, meteo measurement</td>
<td>customized mobile laboratory</td>
</tr>
<tr>
<td>KML-ADR</td>
<td>civilian off-road vehicle</td>
<td>chem and gamma rad. detection and identification, meteo measurement</td>
<td>full capability on a compact, off-road vehicle</td>
</tr>
<tr>
<td>RDO3221 RSV</td>
<td>Radiation-Shielded Emergency Vehicle</td>
<td>gamma detection, direction, dosimetry (three independent), remaining exposition time</td>
<td>decontaminated using highly-pressurised techniques, high gamma radiation shielding, over-pressurised filtration-ventilation system</td>
</tr>
</tbody>
</table>

### Nuclear measurement techniques

- **ANNO 1920**

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- **BNS-94FM**
- **BNS-98L**
- **KML-ADR**
- **KML**
- **RDO3221 RSV**
Hand-held devices, protective equipment and decontamination tools

Features of our hand-held devices:

- wide measuring range
- high sensitivity
- easy to use
- adjustable alarm levels
- audible alarm signal
- wide temperature range
- rugged / military construction

Places of application:

- inspection, customs checkpoints
- mobile defence systems
- threatened facilities

The BNS-92S hand-held radiation level and contamination meter has two operational modes. It operates as a gamma radiation dose and dose rate meter while placed in the carrier case and functions as a contamination meter when it is taken out of it.

The BNS-94B Radiation Warning Equipment serves as a high-sensitivity device for detecting nuclear materials and radioisotopes. The detector of the BNS-94B is a scintillation probe with high sensitivity for gamma and neutron radiation.

<table>
<thead>
<tr>
<th>type</th>
<th>measured values</th>
<th>units</th>
<th>features</th>
</tr>
</thead>
<tbody>
<tr>
<td>IH-295</td>
<td>surface beta contamination in high gamma background</td>
<td>Bq/cm²</td>
<td>integrated storage card and GPS</td>
</tr>
<tr>
<td>BNS-92S</td>
<td>gamma dose, dose rate, alpha, beta surface contamination</td>
<td>Sv, Sv/h, Bq/cm²</td>
<td>two functions in one device</td>
</tr>
<tr>
<td>BNS-94B</td>
<td>gamma radiation</td>
<td></td>
<td>wireless communication with PDA or smartphone</td>
</tr>
<tr>
<td>SFK</td>
<td>gamma, neutron radiation</td>
<td></td>
<td>radionuclide identification</td>
</tr>
<tr>
<td>BNS-295</td>
<td>surface beta contamination in high gamma background</td>
<td>Bq/cm²</td>
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</tr>
</tbody>
</table>
Our decontamination containers and modules are suitable for the decontamination of people and equipment that have been exposed to CBRN contamination.

**Personal protection**

The Escape Hood serves for quick escape purposes from the contaminated area in case of nuclear accidents and catastrophes. The hood provides protection against radioactive iodine and methyl iodide as well as against radioactive dusts and aerosols. Device class: "S"

Full face mask with filters against radioactive iodine and methyl iodide as well as against radioactive dusts and aerosols.

**Personal/casualty Decontamination equipment**

Our decontamination containers and modules are suitable for the decontamination of people and equipment that have been exposed to CBRN contamination.

**Nuclear measurement techniques**

<table>
<thead>
<tr>
<th>Type</th>
<th>Measured Values</th>
<th>Units</th>
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</tr>
</thead>
<tbody>
<tr>
<td>IH-295</td>
<td>Surface beta contamination</td>
<td>High gamma background</td>
<td>2 Bq/cm²</td>
</tr>
<tr>
<td>BNS-295</td>
<td>Surface beta contamination</td>
<td>High gamma background</td>
<td>2 Bq/cm²</td>
</tr>
</tbody>
</table>

**Hand-held devices, protective equipment and decontamination tools**
Have your customized nuclear measuring tool within short time for a reasonable price!
Have Your customized Nuclear Measuring Tool, within short time, for a reasonable price!

Nuclear measurement techniques