For over 60 years, Mirion Technologies has provided recognized solutions in the design and manufacturing of equipment and services to detect, measure and analyze ionizing radiations in nuclear industry, civil and military defense, healthcare and other specialized industries.

The group is comprised of six divisions:
- The Health Physics Division, specialized in active dosimetry, telemetry, contamination and clearance monitors, detection and identification systems, passive dosimetry and survey meters.
- The Sensing Systems Division, specialized in electrical penetrations, in-core and ex-core detectors used in the instrumentation channels of nuclear power plants.
- The Spectroscopy Division, specialized in radiation measurement solutions for laboratory, in vivo, ex situ applications and local experts available around the world to provide consulting services and address any nuclear measurement needs.
- The Characterization Division, specialized in camera systems for hazardous environments as well as NDA systems, Measurements & Expertise for Decommissioning and Waste Management.
- The Dosimetry Services Division, specialized in radiation monitoring services and dosimetry solutions.
- The Radiation Monitoring Systems Division, which develops critical state-of-the-art radiation, neutron flux and specific monitoring solutions.

To provide the Nuclear Industry with the Highest Quality Instrumentation & Control Solutions to Protect People, Property & the Environment.
A Pioneering Company with a Rich History

Mirion Technologies nurtured a radioprotection department from the early 1960’s in order to provide installed radiation monitoring systems (RMS) for the first generation of Nuclear Power Plants. With continued success, we are now recognized as the world leader in providing field-proven monitoring instrumentation throughout the nuclear industry with RMS supplied to over 90% of the world’s second generation nuclear power plants. Nuclear industrialization is now upon us and Mirion Technologies state-of-the-art engineering design expertise continues to provide unrivalled team support that exceeds third generation nuclear power operator expectations including newly developed EPR™ and AP1000™ RMS systems. Mirion Technologies continues to commit its skills and expertise in support of all nuclear industry stakeholders to assist in providing CO2-free energy.

A Global Presence

With 1000 employees, Mirion Technologies group has 13 industrial units in Europe, Asia and Americas and operates a sales network covering 50 countries.

An Exhaustive Range Based on Standard Products Built to the Strictest Standards

The standard products comprising the RAMSYS system, i.e. detection sub-systems, electronic sub-systems with associated software and processing and display instrumentation, are developed according to a thorough certification program, incorporating RCC-C, IEC, ISO and IEEE standards. Test analyses and results are systematically documented. Many RAMSYS products are also IEEE323 and IEC 60780-certified, making them suitable for use in 1E and Safety Related type applications.

Product upgrades to replace obsolete components or incorporate functional improvements are done in real time. They are documented to ensure if compatibility is maintained, and systematically accompanied by analyses plus additional tests if necessary to ensure their continued compliance with certification criteria. All qualified and sold products benefit from full and documented traceability.

Instrumentation Designed for Customer Satisfaction

A team of experienced engineers study and implement the realization of personalized systems based on technical specifications. Our services range from the on-site installation supervision to the commissioning, preventive and corrective maintenance, repairing, training and remote support provided.

Unequalled Competitiveness

The excellent productivity, reliability, longevity and maintainability of our RAMSYS range, coupled with our numerous lessons learned, mean we can offer our customers the very best value for money, in terms of both functional and certification requirements.

A Pertinent Analysis of Customer Requirements

Standard products represent 80% of our sales. In order to satisfy the remaining 20%, our dedicated project teams tailor this standard range to supply turnkey systems which are fully compliant with customer specifications in terms of both functional and certification requirements.

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For on-site solutions, Mirion Technologies offers radiation monitoring area monitoring and neutron radiations (low, wide, high, dual/mixed) with variations of processors and displays, depending upon the location, human factors, and space requirements needed. Along with the state-of-the-art radiation monitoring software packages that facilitate the configuration, maintenance, management, and control of our systems, this technology can be configured to meet specific occupational exposure to radiation. Radiation must be kept below the levels prescribed by regulatory requirements and be low enough to minimize the risk of exposure for workers and the public. Regulatory and national material and natural sources of ionizing radiation, such as nuclear power plants, are controlled through precise regulations.

No matter what conditions exist, individual and collective occupational exposure to ionizing radiation must be kept below the limits prescribed by regulatory requirements and As Low As Reasonably Achievable (ALARA). With the main objective to limit monitors including variation in types, configurations, and sensitivities. Implementing the most innovative detection technologies; to improve the quality and reliability of monitors in all types of operating conditions and on-time.

A full array of effluent air monitors is offered that can be comprised of safety/non-safety, fixed/mobile/portable, and/or iodine, and/or noble gas monitors. Various types of liquid monitoring systems are also provided that can be configured for various space and configuration challenges enabling an effective monitoring any release of liquid effluents into the drinking water supply. Monitoring steam generator tube breaks through N16 detection. Acknowledged worldwide for delivering cost-effective Steam Generator Monitors (SGLM) to nuclear power plants, Mirion also enjoys the acceptance of nuclear power by the public. Monitoring of all three of these conditions as well as space and qualification requirements.

The range of monitors, both the gaseous emissions as well as radioactive gas containing particulates, iodine, and/or noble gas. Determination of radioactive levels in nuclear operational conditions as well as space and qualification requirements.

To provide the Nuclear Industry with the Highest Quality Instrumentation & Control Solutions

Area Monitoring

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Standard Configuration

Local processing units can be used with different applications, either in standalone or in a maintenance PC. The same principle can be used with portable computers using RS232. The ADU can also be used to connect with Ethernet thanks to a converter as a Remote Display Unit (RDUs).

Example of Configuration

Since there are three RS485 serial links available for each RDU, monitors of the RAMSYS family. Therefore, these monitors can be connected to achieve a redundant configuration. The simplest way to communicate with Ethernet Option RAMSYS can be used for safety reasons, in a maintenance PC. Pseudorandom data can be sent through this data link. In both cases, the data from the LPDU are the same than those from the RS485 data link.

Compatibility

The RAMSYS system is very modular. It can be composed of different sub-assemblies, stand alone or integrated in the same network. The RAMSYS system is 1E qualified.

Inputs/outputs on an ADU:

- 3 digital outputs
- 1 RS232 data link output
- 2 analog outputs 0/4-20mA
- 1 analog input 0/4-20mA

Inputs/outputs on a DU:

- 3 relay contacts
- 2 RS485 data link outputs
- 2 analog outputs 0/4-20mA
- 1 analog input 0/4-20mA
- 5 relay contacts

Inputs/outputs on a LPDU:

- 1 RS232 data link output (only for LPDU with display)
- 2 analog outputs 0/4-20mA
- 1 analog input 0/4-20mA

Example of Configuration

Example of Configuration

Example of Configuration

Communication with Ethernet Option

A Maintenance PC can integrate and operate up to 8 LPDs remotel. A wire phone line can be done via a modem. Maintenance or On-line support agreements.

Example of Configuration

Example of Configuration

Example of Configuration

Example of Configuration

Input/outputs on a LPDU:

- 1 RS232 data link output
- 1 RS232 data link output
- 10 digital inputs for LDU, 5 digital inputs for RDU
- 1 RS232 data link output
- 5 relay contacts
- 1 RS232 data link output
- 5 relay Contacts
- 1 RS232 data link output
- 2 RS485 data link outputs
- 1 RS232 data link output
- 1 RS232 data link output

RAMVISION system can be used for safety reasons, in a maintenance PC. Pseudorandom data can be sent through this data link. In both cases, the data from the LPDU are the same than those from the RS485 data link.

Modularity of the System

The RAMSYS system is very modular. It can be composed of different sub-assemblies, stand alone or integrated in the same network. The RAMSYS system is 1E qualified.

Inputs/outputs on a RDU:

- 16 digital outputs for LDU, 8 digital outputs for RDU
- 2 analog outputs 0/4-20mA
- 1 analog input 0/4-20mA
- 3 RS485 data link outputs
- 1 digital input for LPDU with display
- 1 digital output
- 1 digital output
- 1 RS232 data link output
- 1 RS232 data link output

RAMVISION system can be used for safety reasons, in a maintenance PC. Pseudorandom data can be sent through this data link. In both cases, the data from the LPDU are the same than those from the RS485 data link.
**Area Monitors**

<table>
<thead>
<tr>
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<th>Description</th>
<th>Range</th>
</tr>
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<tbody>
<tr>
<td>ABPM 201S</td>
<td>Liquid Monitors</td>
<td>10⁻³ to 3.7x10¹² Bq/m³</td>
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<tr>
<td>ABPM 203M</td>
<td>Liquid Monitors</td>
<td>10⁻² to 3.7x10¹² Bq/m³</td>
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</table>

**Special Monitors**

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**Combination Monitors**

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**Nuclear References and Guidelines**

For more information, see the following international standards:

- **Accident and post-accident**:
  - IEC 61005 or IEC 61322
- **Neutron**:
  - IEC 60951
- **Gamma, X**:
  - IEC 60761-1 & 3
- **Particulate**:
  - IEC 60761-1 & 5
- **Gas**:
  - IEC 61005 or IEC 61322
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We protect people, property and the environment

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